

ORIGINAL

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION MAGISTRATE JUDGE MORGAN

RICHARD J. DITZIK d/b/a NetAirus Systems,
an individual/sole proprietorship,

Plaintiff,

vs.

JUDGE : Friedman, Bernard A.
DECK : S. Division Civil Deck
DATE : 09/19/2005 @ 15:21:03
CASE NUMBER : 2:05CV73584
CMP RICHARD J. DITZIK V ERGOTRON
INC ET AL (LG) SI

ERGOTRON, INC., ACER AMERICA CORP., ADI SYSTEMS, INC., ADVUEU TECHNOLOGY, AMAZON.COM, INC., BENQ AMERICA CORP., AOC TECHNOLOGIES, INC., BUY.COM, INC., COSTCO WHOLESALE CORPORATION, EIZO NANAOTECHNOLOGIES, INC., ENVISION PERIPHERALS, INC., GATEWAY, INC., HEWLETT-PACKARD COMPANY, HYUNDAI IMAGEQUEST AMERICA, IIYAMA NORTH AMERICA INC., LACIE USA, LENOVO GROUP, LTD., LG ELECTRONICS USA, INC., MICROTEK LAB, INC., NEWEGG COMPUTERS, INC., PHILIPS CONSUMER ELECTRONICS, PRINCETON DIGITAL (USA) CORP., SCANPORT, INC., SEPTRE CORPORATION, SHARP ELECTRONICS CORPORATION, SONY CORPORATION OF AMERICA, TIGER DIRECT, INC.,

Defendants.

JURY TRIAL REQUESTED

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JOHN E. NEMAZI (P33285)
FRANK A. ANGILERI (P45611)
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COMPLAINT FOR PATENT
INFRINGEMENT AND JURY DEMAND



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Plaintiff, RICHARD J. DITZIK D/B/A NETAIRUS SYSTEMS ("Ditzik"),
for his Complaint herein, states as follows:

I. JURISDICTION

1. This is an action for patent infringement arising under the Patent Laws of the United States, Title 35, United States Code.

2. The subject matter jurisdiction for this Court is founded upon 28 U.S.C. § 1338 (patents) and 28 U.S.C. § 1331 (federal question).

3. Upon information and belief, defendants, **ERGOTRON, INC., ACER AMERICA CORP., ADI SYSTEMS, INC., ADVUEU TECHNOLOGY, AMAZON.COM, INC., AOC TECHNOLOGIES, INC., BENQ AMERICA CORP., BUY.COM, INC., COSTCO WHOLESALE CORPORATION, EIZO NANA0 TECHNOLOGIES, INC., ENVISION PERIPHERALS, INC., GATEWAY, INC., HEWLETT-PACKARD COMPANY, HYUNDAI IMAGEQUEST AMERICA, IIYAMA NORTH AMERICA INC., LACIE USA, LENOVO GROUP LTD., LG ELECTRONICS USA, INC., MICROTEK LAB, INC., NEWEGG COMPUTERS, INC., PHILIPS CONSUMER ELECTRONICS, PRINCETON DIGITAL (USA) CORP., SCANPORT, INC., SEPTRE CORPORATION, SHARP ELECTRONICS CORPORATION, SONY CORPORATION OF AMERICA, TIGER DIRECT, INC.,** (collectively "defendants"), regularly and continuously engage in substantial sales and other business transactions in the Eastern District of Michigan, and have



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sold infringing products and/or committed infringing acts in this district. The United States District Court for the Eastern District of Michigan therefore has *in personam* jurisdiction over the defendants.

II. THE PARTIES

4. Plaintiff, Richard Ditzik d/b/a NetAirus Systems, is an individual/sole proprietorship located at 307 Surrey Drive, Bonita, California 91902.

5. Upon information and belief, defendant Ergotron, Inc. d/b/a Constant Force Technology is a Minnesota corporation having a place of business at 1181 Trapp Road, St. Paul, Minnesota 55121.

6. Upon information and belief, defendant Acer America Corp. is a California corporation having a place of business at 2641 Orchard Parkway, San Jose, California 95134.

7. Upon information and belief, defendant ADi Systems, Inc. is a California corporation having a place of business at 2501 Park Boulevard, Suite 205, Palo Alto, California 94306-1925.

8. Upon information and belief, defendant Advueu Technology is a California corporation having a place of business at 1001 Lawson Street, City Of Industry, California 91748.



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9. Upon information and belief, defendant Amazon.com, Inc. is a Delaware corporation having a place of business at 1200 12th Avenue, S., Suite 1200, Seattle, Washington 98144-2734.

10. Upon information and belief, defendant AOC Technologies, Inc. is a California corporation having a place of business at 4900 Hopyard Road, #100, Pleasanton, California 94588.

11. Upon information and belief, defendant BenQ America Corp. is a California corporation having a place of business at 53 Discovery, Irvine, California 92618.

12. Upon information and belief, defendant Buy.com, Inc. is a California corporation having a place of business at 85 Enterprise, Suite 100, Aliso Viejo, California 92656-2627.

13. Upon information and belief, defendant Costco Wholesale Corporation is a Washington corporation having a place of business at 999 Lake Drive, Suite 200, Issaquah, Washington 98027-5367.

14. Upon information and belief, defendant Eizo Nanao Technologies, Inc. is a California corporation having a place of business at 5710 Warland Drive, Cypress, California 90630.

15. Upon information and belief, defendant Envision Peripherals, Inc. is a California corporation having a place of business at 47490 Seabridge Drive, Fremont, California 94538.



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16. Upon information and belief, defendant Gateway, Inc. is a Delaware corporation having a place of business at 7565 Irvine Center Drive, Irvine, California 92618.

17. Upon information and belief, defendant Hewlett-Packard Company is a Delaware corporation having a place of business at 3000 Hanover Street, Palo Alto, California 94304.

18. Upon information and belief, defendant Hyundai Imagequest America is a California corporation having a place of business at 3101 N. First Street, San Jose, California 95134.

19. Upon information and belief, defendant Iiyama North America Inc. is a Pennsylvania corporation having a place of business at 1560 Brookhollow Drive, Suite 208, Santa Ana, California 92705.

20. Upon information and belief, defendant LaCie USA has a place of business at 22985 NW Evergreen Parkway, Hillsboro, Oregon 97124.

21. Upon information and belief, defendant Lenovo Group Ltd. has a place of business at One Manhattanville Road, Purchase, New York 10577.

22. Upon information and belief, defendant LG Electronics USA, Inc. is a Delaware corporation having a place of business at 1000 Sylvan Avenue, Englewood Cliffs, New Jersey 07632.



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23. Upon information and belief, defendant Microtek Lab, Inc. is a California corporation having a place of business at 16941 Keegan Avenue, Carson, California 90746.

24. Upon information and belief, defendant Newegg Computers, Inc. has a place of business at 132 South 6th Avenue, La Puente, California 91746.

25. Upon information and belief, defendant Phillips Consumer Electronics is a California corporation having a place of business at 64 Perimeter Center E, Atlanta, Georgia 31416

26. Upon information and belief, defendant Princeton Digital (USA) Corp. is a California corporation having a place of business at 3300 Irvine Avenue, Suite 120, Newport Beach, California 92660-3115.

27. Upon information and belief, defendant Scanport, Inc. has a place of business at 938 Radecki Court, City Of Industry, California 91748.

28. Upon information and belief, defendant Septre Corporation is a Nevada corporation having a place of business at 14141 Covello 7-C, Van Nuys, California 91405.

29. Upon information and belief, defendant Sharp Electronics Corporation is a New York corporation having a place of business at Sharp Plaza, Mahwah, New Jersey 07430.

30. Upon information and belief, defendant Sony Corporation of America has a place of business at 550 Madison Avenue, New York, New York 10022.



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31. Upon information and belief, defendant Tiger Direct, Inc. is a Florida corporation having a place of business at 7795 W. Flagler Street, Suite 35, Miami Florida 33144-2367.

III. BACKGROUND

32. On May 16, 2000, U.S. Patent No. 6,064,373 ("the '373 patent") entitled "Desktop Computer with Adjustable Flat Panel Screen" was duly and legally issued. (See Exhibit A, U.S. Patent No. 6,064,373.)

33. On December 4, 2001, U.S. Patent No. 6,326,955 ("the '955 patent"), entitled "Information Device with Adjustable Flat Panel Screen," was duly and legally issued. (See Exhibit B, U.S. Patent No. 6,326,955.)

34. Ditzik is the owner of all right, title and interest in the '955 and '373 patents including all pending applications that are continuations thereof.

35. In 2003, Ditzik filed a lawsuit in the Eastern District of Michigan Case No. 03-74043 asserting infringement of the '955 and '373 patents against Viewsonic Corporation, Samsung Electronics America, Inc., NEC-Mitsubishi Electronics Display of America, Inc., Planar Systems, Inc., and Dell, Inc.

36. In 2005, in resolution of the lawsuit, Viewsonic, Samsung, NEC-Mitsubishi, Planar and Dell all paid Ditzik for licenses to the patents-in-suit. An example of



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a Viewsonic licensed product compared to the claims of the '955 and '373 patent is attached as Exhibit C.

IV. COUNT I - PATENT INFRINGEMENT

37. Ditzik realleges paragraphs 1-36 as set forth fully herein.

38. Defendants have made, used, offered for sale, imported and sold in the United States, and continue to make, use, offer for sale, import and sell in the United States flat panel displays which infringe the '955 and '373, induce others to infringe, and/or contributorily infringe the '955 and '373 patents.

39. Ditzik has suffered damages as a result of the infringing activities of the defendants, and will continue to suffer such damage as long as those infringing activities continue.

40. To the extent each Defendant has knowledge of the '955 patent or the '373 patent and has not fulfilled its duty of care, such Defendants' infringement is willful, wanton, and deliberate.

41. Ditzik has no adequate remedy at law. Unless enjoined by this Court, the defendants will continue such acts of infringement to Ditzik's substantial and irreparable damage.



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V. DEMAND FOR RELIEF

Accordingly, Ditzik respectfully demands that this Court enter judgment:

A. Preliminarily and permanently enjoining and restraining defendants, their officers, directors, employees, agents, servants, successors and assigns, and any and all persons acting in privity or in concert with the defendants, from further infringement of the '955 and '373 patents;

B. Awarding Ditzik his damages, together with prejudgment interest and costs, and increasing those damages to three times the amount found or assessed as provided by 35 U.S.C. § 284;

C. Declaring this an exceptional case within the meaning of 35 U.S.C. § 285, and awarding Ditzik his reasonable attorney's fees and costs and disbursements in this action; and

D. Granting to Ditzik such other and further relief as this Court deems reasonable.



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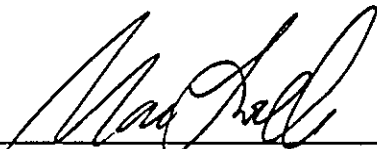
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VI. DEMAND FOR JURY TRIAL

Ditzik respectfully demands a trial by jury of any and all issues triable of right
by a jury in the above-captioned action.

Respectfully submitted,

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By: 

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Dated: September 19, 2005



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A



US006064373A

United States Patent [19]

Ditzik

[11] Patent Number: 6,064,373

[45] Date of Patent: *May 16, 2000

[54] **DESKTOP COMPUTER WITH ADJUSTABLE FLAT PANEL SCREEN**

[76] Inventor: Richard J. Ditzik, 307 Surrey Dr., Bonita, Calif. 91902

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).
This patent is subject to a terminal disclaimer.

4,606,628	8/1986	Vance	353/101
4,729,533	3/1988	Hillary et al.	248/184
4,827,085	5/1989	Yaniv et al.	345/176
4,859,092	8/1989	Makita	400/83
4,864,601	9/1989	Berry	379/93.07
4,931,019	6/1990	Park	345/173
5,128,662	7/1992	Failla	345/1
5,196,993	3/1993	Herron et al.	361/681
5,278,779	1/1994	Conway et al.	364/708.1
5,729,429	3/1998	Margaritis et al.	361/680

FOREIGN PATENT DOCUMENTS

2-148086 6/1990 Japan 345/905

[21] Appl. No.: 08/937,258

[22] Filed: Sep. 13, 1997

Related U.S. Application Data

[63] Continuation of application No. 08/288,882, Aug. 10, 1994, Pat. No. 5,668,570, which is a continuation-in-part of application No. 08/084,811, Jun. 29, 1993, abandoned.

[51] Int. Cl.⁷ G09G 3/00

[52] U.S. Cl. 345/173; 345/905; 361/681; 248/920

[58] Field of Search 345/173, 176, 345/179, 180, 174, 905; 248/917, 918, 920, 921, 923, 922, 919; 361/679, 688, 724, 680, 681, 682; 364/708.1; 400/83, 84; 178/18, 19, 18.01-18.11, 19.01-19.07

[56] References Cited

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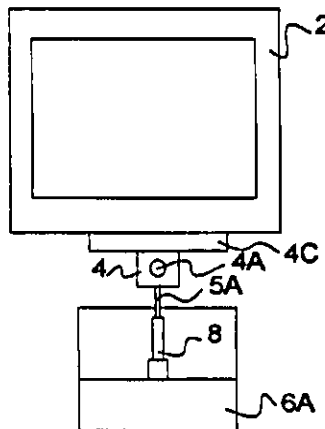
4,438,458 3/1984 Munscher 348/838

Primary Examiner—Lun-Yi Lao

[57] ABSTRACT

A relatively small transportable desktop computer/workstation with a display panel assembly (2) in combination with a microprocessor or controller (44) is made display screen position adjustable, in inclination angle, azimuth angle and elevation translation movements. The workstation can have a pen or stylus touch screen input function (36) added, so that a user or operator can write, draw and sketch directly onto the screen in a natural manner. The workstation can be placed on top of a desk or table providing an ergonomic man-machine interface for information communications between individual users via a communications network. A keyboard (7, 42), voice/speaker telephone (48), mouse or trackball input unit (46), and communications modem (42) may be added to the workstation. The flat panel display, pen input unit and microprocessor can be combined into an assembly, which can be removed from the main body for portable mobile computing operation.

9 Claims, 5 Drawing Sheets



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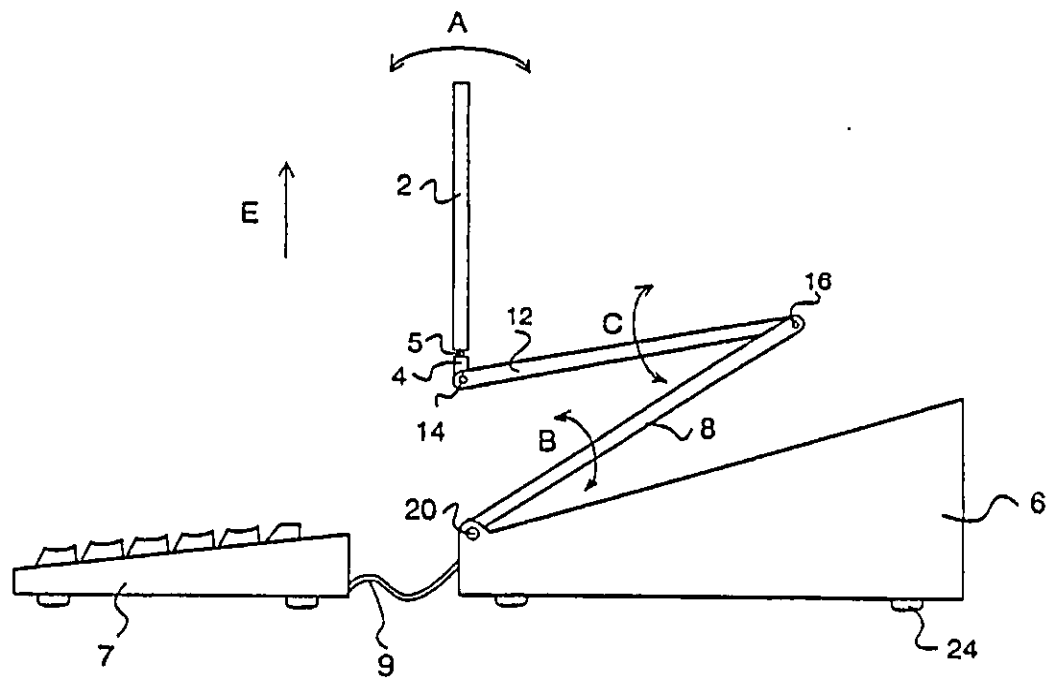


FIG. 1A

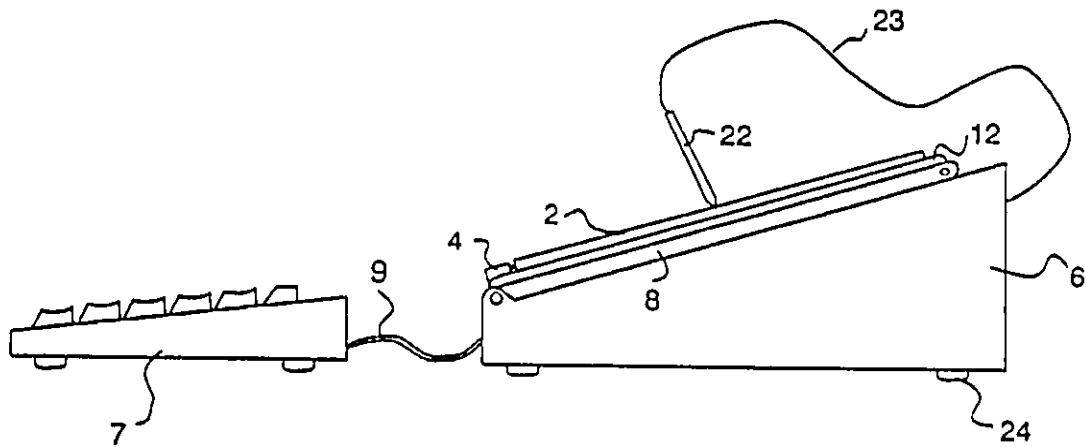


FIG. 1B

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Sheet 2 of 5

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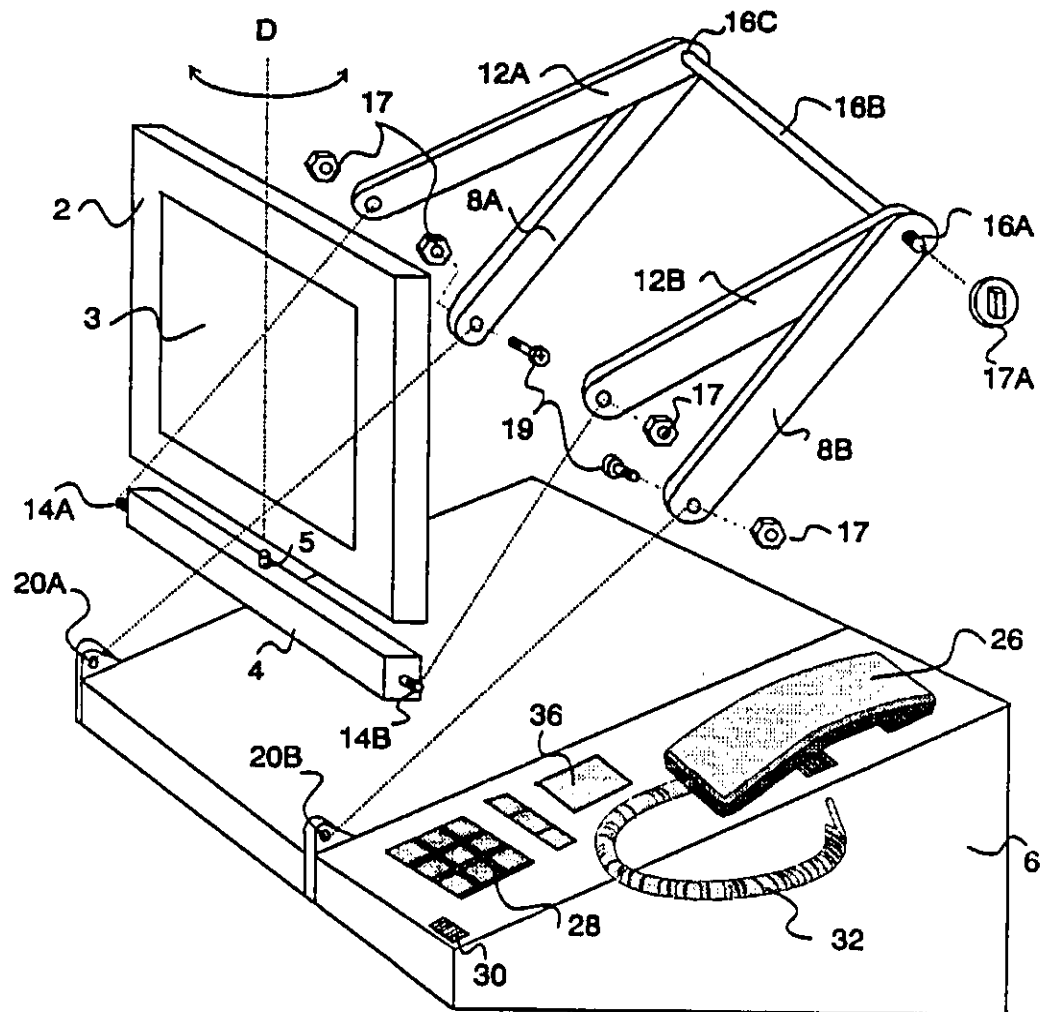


FIG. 2

U.S. Patent

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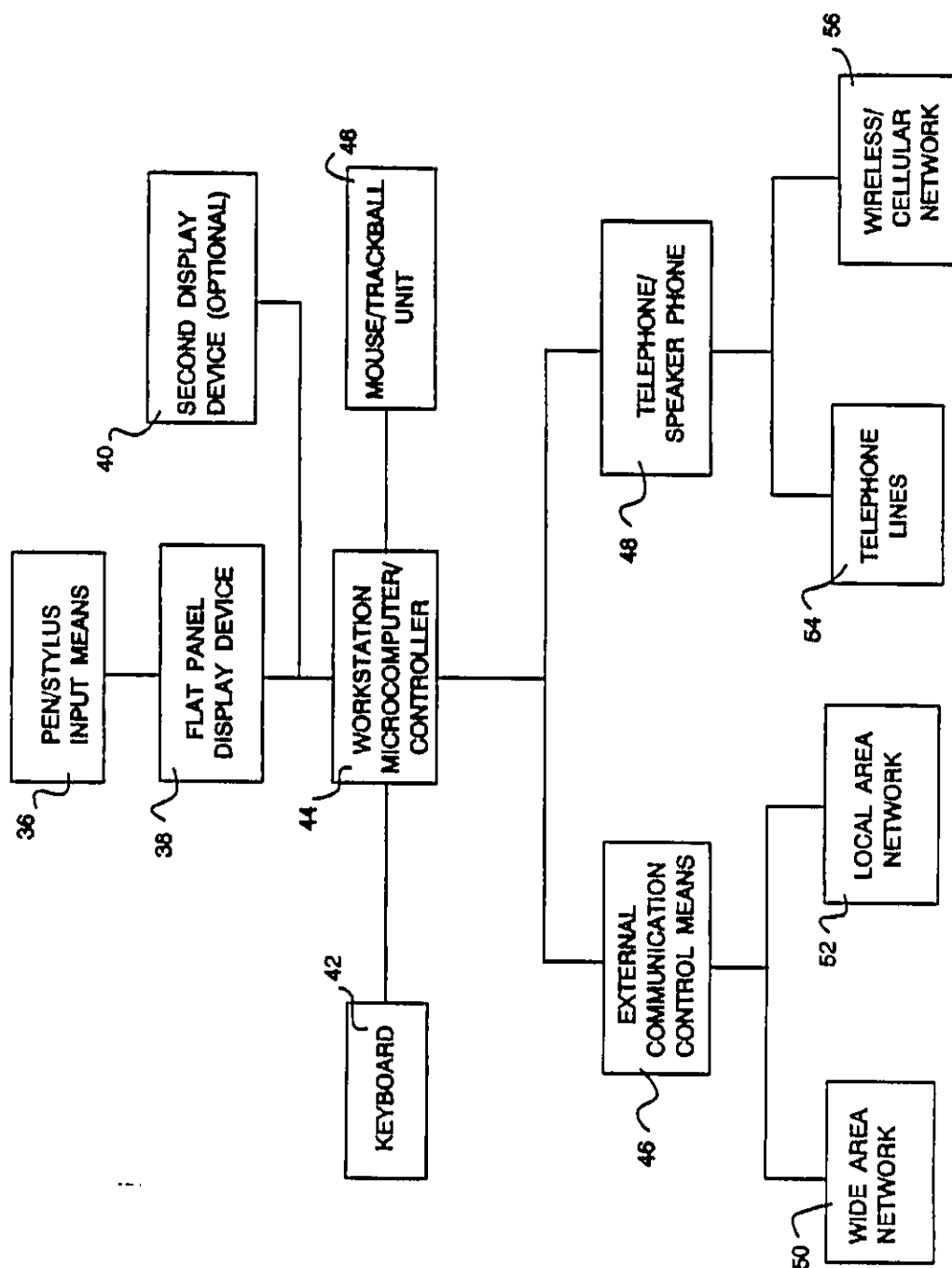


FIG. 3

U.S. Patent

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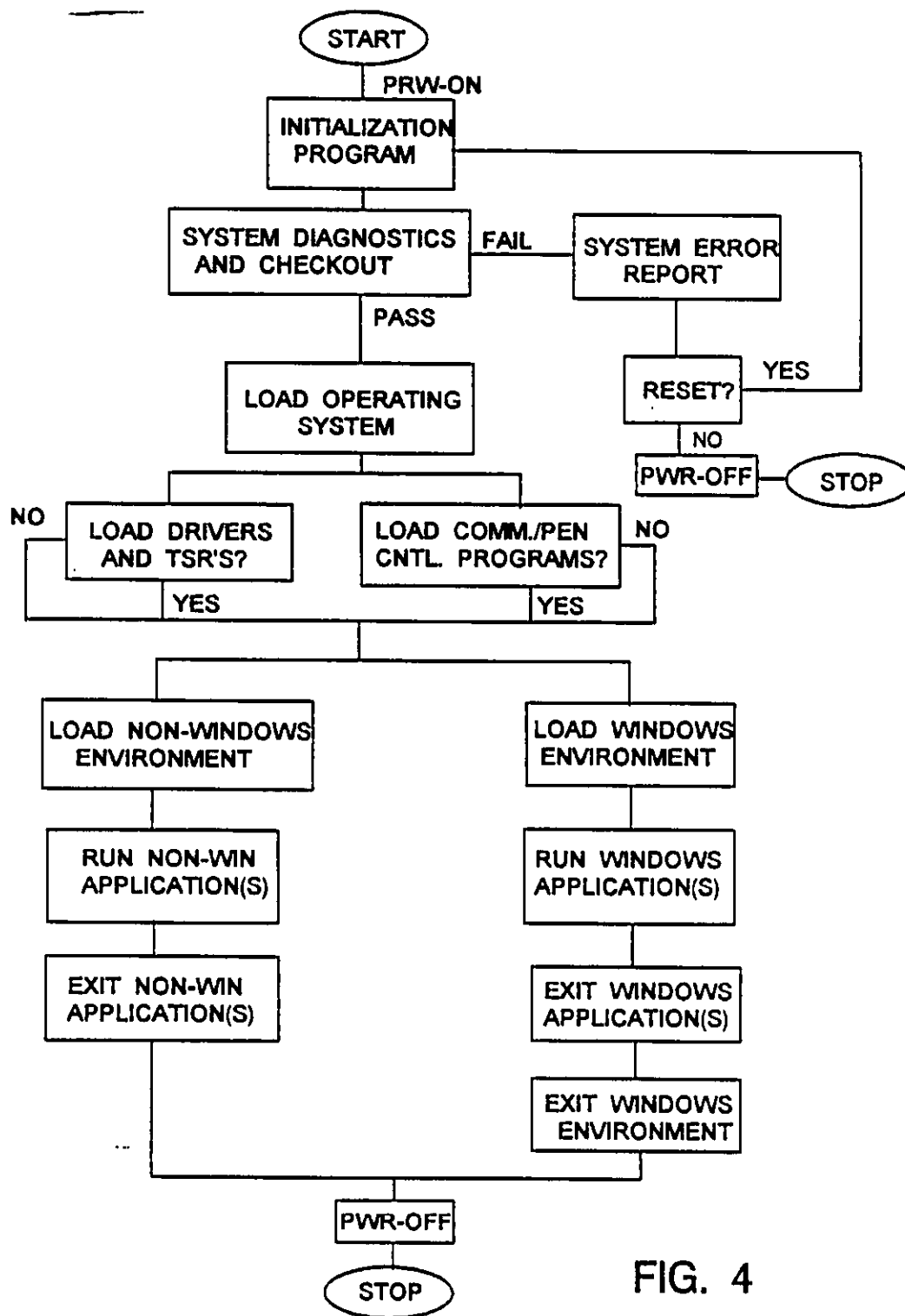


FIG. 4

U.S. Patent

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Sheet 5 of 5

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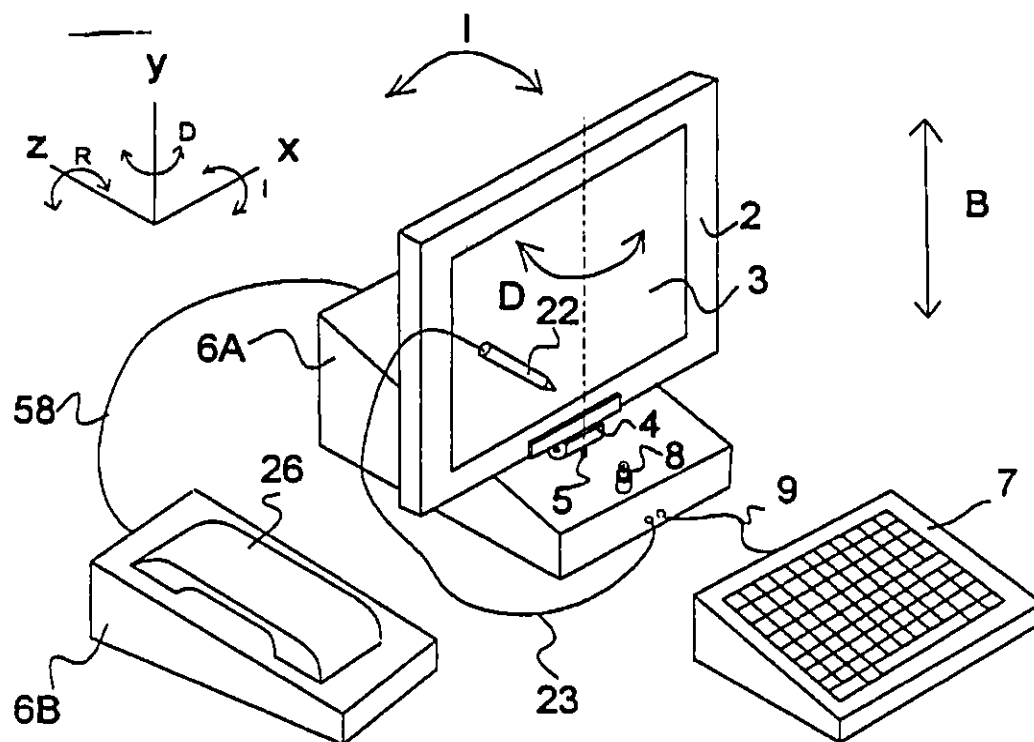


FIGURE 5

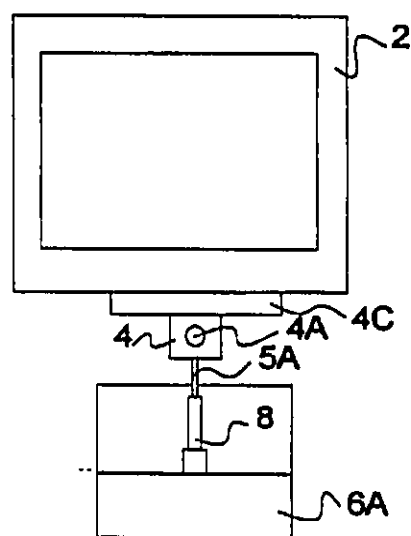


FIG. 6A

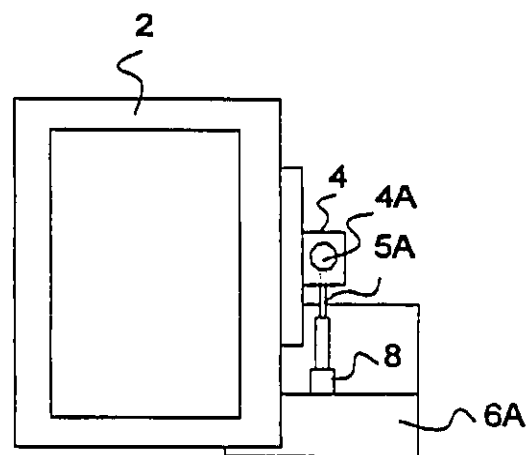


FIG. 6B

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DESKTOP COMPUTER WITH ADJUSTABLE FLAT PANEL SCREEN

This is a continuation application of Ser. No. 08/288,882, filed Aug. 10, 1994 now U.S. Pat. No. 5,668,570, issued Sep. 16, 1997, which was a CIP of Ser. No. 08/084,811, filed Jun. 29, 1993, now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to desktop or portable computers with flat panel displays. In particular it relates to personal computers that will lie on a desk or table, which a human operator will use to: (1) enter keyboard data, pen or voice data/information; (2) view displayed information and/or (3) hear audio/voice information.

2. Description of the Prior Art

Heretofore, portable computers with flat panel displays were embodied in a "clamshell" type design. When these prior art computers are ready for use, the display panel is unfolded to a roughly vertical orientation. The attached keyboard and computer enclosure form the bottom half of the clamshell. For portable transport, the flat panel display is folded down over the keyboard and computer enclosure. This prior art configuration has several shortcomings. First, since the unit sits on a desk or table, the screen is always at a lower elevation than the eye level of the person sitting and operating the computer. Thus the person must continually look down to the display. Over long periods of time, this will cause neck and back strain on the user. Secondly, if a pen/stylus input means is added to the display screen, the roughly vertical operating orientation is inconvenient and ergonomically incorrect when the user is handwriting or sketching. If the user tries to hold his/her arm up to write on a vertical screen, the users arm will tire. Over long periods of writing on a vertical screen, this awkward position will cause strain on one's wrist. Even if the user is willing to hold his/her hand up to write on the vertical screen, it may not be physically secure for the user's hand pressure. Thirdly, the prior art clamshell design does not provide elevation adjustment or azimuth angle adjustment means. This restricts the ergonomic usability of the prior art computer and display units.

For example, U.S. Pat. No. 4,859,092 of Makita discloses a portable typewriter and display unit. However, a single pair of pivoting arms connect the display unit to the main body. When its display unit is raised to its highest elevation, the distance from the user's eyes to the display screen is large. Therefore, middle aged users who are near sighted, will have difficulty in viewing the screen. No pen/stylus input mean is disclosed, but even if one is added, the display unit would not provide a physically secure writing surface. The Makita does not provide a means of placing equal and opposite restraining force onto the display unit. U.S. Pat. No. 4,624,434 of Lake discloses a tiltable display terminal, but no display unit elevation adjustment is taught. Again no pen input means is disclosed, and if one is added, the unit would not be physically stable for normal hand/arm forces applied by the user. U.S. Pat. No. 5,115,374 of Hongoh teaches a laptop portable computer with a facsimile function. Hongoh discloses a touch panel screen, but no pen input means, and no vertical elevation adjustment of its display unit is taught. In order to provide a horizontal display orientation, the display unit must be detached from the main body and set back, in reverse orientation, to the connector sockets on the main body, which is a severe disadvantage.

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Several prior art pen computer units exist. However, their display screens are fixed to their enclosure to form a flat tablet. They are designed for the mobile user market. This limits their use for desktop pen/stylus computing environments. No prior art has solved the problem of a personal computer for the office environment, capable of standard computing, pen computing, and voice telephone communications.

The invention disclosed herein solves the above problems by providing an ergonomic designed desktop system that is capable of several important computer and communications functions. It provides a display panel assembly, pen/stylus input unit, multiple support arms, and a main unit in a roughly wedge shape. The display panel assembly can be adjusted in inclination angle, azimuth angle and elevation. Thus invention overcomes the problems of the prior art. For example, the display panel of the invention can be easily adjusted by hand in elevation to a height roughly of the user's eye level. The user does not have to look down to see the screen when in normal PC-keyboard operation. If the unit is used as a pen/stylus computer, the display panel can be folded by hand to a physically secure position, at an inclination angle that is ergonomically correct for handwriting and sketching. Finally, the display screen can be physically adjusted in many orientation combinations, including azimuth angles, inclination angles and elevation translations. Thus the invention can be used in a wide range on office desktop positions and by a wide range of users and orientations.

SUMMARY OF THE INVENTION

The disclosed invention overcomes the shortcomings of the prior art by providing display screen adjusting means for desktop computers and terminals, such that the entire apparatus is sufficiently small to be portable or transportable. The invention disclosed herein provides an easy to use desktop workstation, to which the human user can adjust its screen for many screen positions. In addition, the workstation can fold down for transport. The workstation may also include external communication means such as voice/data modem and/or telephone means.

Accordingly an object of the invention is to provide small compact workstation for the office, having an array of useful functions and capabilities at the finger tips of the human user sitting at his/her desk. Functions may include pen/stylus input means, computer means, display device(s), mass memory devices, keyboard, mouse, speaker phone, network interface and modem.

Another object of the invention is to give the user a voice and data communications capability at the desktop, capable of standard text/graphics computing, as well as voice/video/pen communication to others individuals or computers, via modem or network (LAN/WAN) interfaces.

Still another object of invention is to provide the user with an ergonomic workstation that can be adjusted to a wide range of positions and orientations, such that there will be a reduction or elimination of body stress and fatigue by the user, over long periods of use.

Still another object of the invention is to provide a modular desktop workstation such that the user can configure the workstation to how he/she works, or to their choice at a particular time. For example, the user will have the choice of using a detached keyboard, pen/stylus input, mouse, trackball, handset telephone, or speaker telephone, depending on his/her wishes for accomplishing a particular task.

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Still another object of the invention is to provide a unit that is small and light enough for the user to easily transport it to other locations. Other objects of the invention will become evident by reading the following invention descriptions and inspection of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a side view of the desktop workstation with the display panel assembly oriented vertically and somewhat raised from its lowest position.

FIG. 1B is a side view of the desktop with the display panel assembly folded to its lowest inclined position, with a stylus/pen input means.

FIG. 2 is exploded perspective view of the desktop workstation with a telephone means placed on one side.

FIG. 3 is a general block diagram of the electrical elements of the invention.

FIG. 4 is a general flow diagram of the software that may execute on the workstation's digital computing means.

FIG. 5 is a perspective view of a display monitor associated apparatus.

FIGS. 6A & 6B are front views of display monitors with two different screen roll angles.

DETAILED DESCRIPTION

The invention can be described with reference to FIG. 1A and 1B shows a desktop workstation from the side in two different display screen orientations and modes of operation. The term desktop workstation is defined to be an interactive man-machine or man-computer interface, in which a human being can enter and view data/information. The workstation or interface may or may not include a digital computing means. A display panel assembly 2 is attached to a support structure 4 via a hinge pin 5. The support structure 4 is connected to a support arm 12 via a hinge means 14. The display panel assembly 2 includes a relatively thin display device further defining a viewing screen. Examples of the possible display technologies are Liquid Crystal Displays (LCD), electro-luminescent, plasma panel, and field emission displays. They may be monochrome or color, and they could be light modulator or light emitter types of displays. LCD's are most commercially available flat panel display devices, available in a wide variety of sizes, shapes, resolutions and other characteristics.

Typical of these LCD's is the Sharp Electronics Corporation's LM64P90 and LM64K90 monochrome LCD's. They have a 640x480 display pixel format, a viewing area of 196x148 mm, a dot pitch of 0.30x0.03 mm, and cold cathode fluorescent backlight. The former has 150 ms rise plus fall response time, a transmissive viewing mode, 50 Nits brightness, and 13:1 contrast ratio. The latter has a 250 ms rise plus fall response time, a transmissive viewing mode, 35 Nits brightness, and 10:1 contrast ratio. For many applications, color LCD's are required. Sharp Electronics Corp. makes several direct-view color Thin Film Transistor (TFT) LCD modules. Typical specifications for their LQ10DH11 product are a 640(x3)x480 display pixel format, 211x158 mm viewing area, a 0.33(0.11x3)x0.33 mm dot pitch, a hot cathode fluorescent backlight.

The display panel assembly 2 is free to rotate through large inclination angles (at least 90 degrees), represented by rotation A, about the hinge axis of hinge means 14. Support arms 12 and 8 in turn connect the display panel to the workstation a main unit 6. The main unit may include an enclosure or housing for control electronics including a

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digital computer, microprocessor or other control means. The display panel assembly 2 may be electrically connected to electronics located in the main unit 6, via an electrical cable routed inside the support structure 4 and support arms 12 and 8, or via a cable routed externally to the main unit. The size of main unit 6 should be small, so as to not present a large "foot print" on the desk or table. The unit should be easily carried by one person. The invention may be powered by light weight batteries or it may be an AC powered workstation.

The support arm 8 is attached to support arm 12 by a hinge means 16, such that the latter arm can be rotated through rotation C about the axis of the hinge means, as shown in FIG. 1A. Support arm 8 is attached to the main unit 6 by hinge means 20, such that the arm can rotate through large angles as shown in rotation B about the axis of the hinge means. Thus the above mechanical elements can work in combination, and the user is can adjust the orientation of the display panel assembly 2 in both inclination angle and elevation. The friction of each hinge is such that the user can adjust the orientation by hand, and its position is either self-locking or can be adjusted to lock in position. The lengths of the support arms 8 and 12 should be selected to provide the desired display screen elevation and forward viewing positions. Many different combinations of lengths may be embodied.

Several methods can be implemented to give the user to capability to adjust the screen in azimuth angle. One technique is to rotationally attach the display panel assembly 2 to a support structure 4 via a cylindrical hinge pin 5, so that the display can rotate through azimuth angles. The hinge pin 5 can be made hollow so that electrical conductors can be routed through it to the support structure 4. Another method would be to place the main unit on stationary base structure via a lazy-susan structure. Rubber feet may be placed under the main unit, as shown in the figure. The weight of the display panel assembly 2 should be as low as possible, and the mass of the main unit and its electronics should be large enough so that if the display assembly is adjusted in the extreme forward position, the unit will remain physically and gravitationally stable. A computer keyboard unit 7 is shown connected to the main unit 6 via an electrical cable 9. The computer keyboard unit 7 may be attached or detached. If it is a detached keyboard, the electrical signals may be transmitted to the computer via wires or electromagnetic radiation means.

FIG. 1B shows the workstation of in FIG. 1A, except the display panel is folded down to its lowest inclined position and a stylus input means 22 is included. The stylus input means is defined to be a stylus or pen position encoding device that encodes, in two or three dimensions, the position of a hand-held stylus, as the user moves it over an active area corresponding to the display screen. The screen of the display panel is facing upward and at a convenient inclined angle for user hand writing, drawing and sketching with the stylus or pen. An electrical wire/cable 23 may be used to connect the pen/stylus to the control electronics in the main unit. A natural inclined angle of the screen for stylus/pen data input is roughly 30 degrees from the horizontal. However, the display panel assembly may be locked into position at a multiplicity of orientations.

Another embodiment is shown in FIG. 2, which presents a perspective view of another embodiment of the invention, where several elements are shown in exploded view, for clarity. A display panel assembly 2 including its display screen 3 is rotationally connected to the support structure 4 via the cylindrical hinge pin 5. The display panel assembly

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is then free to rotate through wide azimuth angles D as shown. The support structure 4 is connected to support arm pairs 12A and 12B via hinge means 14A and 14B. The cylindrical shafts of hinges 14A and 14B, which may be threaded, fit in the round holes of the support arm pairs 12A and 12B. Support arm pair 8A and 8B is attached to the previous arm pair at hinge elements 16A, 16B and 16C, where element 16B is a long shaft, the ends of which may be threaded. The other ends of support arm pair 8A and 8B are attached to the main unit 6 via hinges 20A and 20B. The friction of each hinge means may be adjusted by a threaded shaft or screw 19 and a standard nut 17 or a finger tightened nut/knob 17A. The friction should be sufficient to support the display panel assembly under the gravitational and normal hand writing/sketching forces.

As shown in FIG. 2, a telephone unit may be added or integrated into the desktop workstation. A telephone handset 26 and cord 32 may be located either side of the workstation. A telephone keypad 28 should be placed in a convenient location of the user. For a hands-free telephone operation, a microphone 30 and speaker 36 may be included. The telephone unit may be attached or detached from the main unit. The telephone may function during workstation operation and/or independently of the workstation operation. A computer keyboard, mouse or trackball devices may be included, in addition to the stylus/pen input means. All controls should be designed to be simple and easy to use.

FIG. 3 shows a block diagram of the basic electrical elements of the computer workstation. The pen/stylus input means' electronics 36 can be interfaced directly to flat panel display device electronics 38. Examples of available products that have combined these functions are the Super-K™ display tablet from SuperScript Inc., Video Tablet from Kurta Corporation, and the PL-100 Integrated Tablet for Wacom Technology Corp. Typically, these products are connected to a controller card in the computer's I/O bus, via a cable. Specifications for such display-tablet include: active area 7.56 by 5.67 inches, accuracy ± 0.02 inch, resolution 1016 PPI, data transfer rate 270 coordinate pairs/sec., pen slew rate up to 135 IPS without significant distortion, and stylus/pen weight 15 grams.

As shown in the figure the flat panel display is electrically connected to the workstation microcomputer/controller 44. The microcomputer may be any one of several commercially available products, such as the Intel™ 86286, 86386 or 86486 processors, Motorola Corporation's 68030 or 68040 processors, as well as several others. If the workstation is to be battery powered, then low voltage (3V) low-power microprocessors should be used. The microcomputer/controller 44 may be embodied by several means.

One available microcomputer system that may be used, is the Moby Brick product manufactured by Ergo Computing of Peabody Mass. The Moby Brick product consists of a 386/486 CPU, with 4 to 32 MB RAM, hard disk s from 170 MB to 1 GB, built in video controller, a 3.5 inch 1.44 MB floppy drive, two serial ports, one parallel port and one ISA 16 bit half length card slot. All the above is built into a 7.9x11.3x3.3 inch module that weighs 8.7 lbs. The CPU required by the invention may be a 20 MHz 386SX, 33/40 MHz 386DX, or the 33 MHz 486DX. Either internal or external modems may be embodied in to the system. An optional expansion chassis may be added to the system with four slots for ISA cards.

FIG. 4 shows a general flow diagram of typical stored program software that may execute in the microcomputer or processor 44. Many commercial available operating

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systems, window environment and application software are available to run in the microcomputer. Typical operating systems that could be used include Microsoft Corporation's MS-DOS™, IBM's OS/2™, Go Corporation's Pen Point or various companies' UNIX products. Possible windowing environments include Microsoft's Windows™ 3.x and Windows for Pen™, Hewlett-Packard's New Wave™, or X-Windows from various companies. Software may be pen centric like Pen Point™ software or it may be just pen/mouse aware. As shown in FIG. 4, after a standard power up and the system diagnostics and checkout is completed the operating system is loaded. Depending on the desired configuration a number of device driver, TSR's, communication programs and pen/stylus control programs may be loaded. The workstation should be capable of either running windows or non-windows environments.

The microcomputer/controller 44 of FIG. 3 includes associated support electronics, I/O devices and power supply. All the above should be compact in size, so that the size of the overall desktop workstation is as small as practical. The advantage of small size is that it provides a smallest footprint of the desk. This is important in office environments, where desk space is at a premium. The main unit's footprint dimensions, on the desktop, could be in the range of 15 by 13 inches, depending of the size of the screen and whether of telephone handset is included.

The keyboard function 42 may be electrically connected to the microcomputer/controller 44. A standard mouse/trackball unit 46 may be connected to the microcomputer via an I/O card or serial port in the standard manner. Both the pen and mouse/trackball interfaces may be desirable in certain applications. An external communication means 46 is connected to the microprocessor. The communications means could be embodied by a communications I/O card, internal/external modem or other communication means. However embodied, the workstation shall have the capability to communicate data (text, graphics, video, and voice) interactively on either Wide Area Networks (WAN) 50 or Local Area Networks (LAN) 52. The WAN in its simplest form may consist for two workstations connected to each other via internal/external modems over standard or hi-speed telephone lines.

Either an external or internal (built-in) telephone/speaker phone 48 may be connected to the microprocessor/controller. It may be integrated into the workstation or embodied as a stand alone device, depending on the user's requirements. The telephone/speaker phone may also be connected to ordinary telephones lines 54 or wireless/cellular networks 56. The primary purpose of the external communication means of the workstation is to provide two way interactive text, graphics (including pen/stylus), video and voice/audio communication to: (1) other users operating similar workstations (at the same time or unattended), and/or (2) one or more computers on a network of computers or terminals. Other standard computing and communication components may be added to the invention that are obvious to those skilled in the art.

In another embodiment, the microprocessor and support electronics 44 can be located at the display panel assembly 2, instead of the main unit 6. For example, they may be located on one or more printed circuit boards surrounding and behind the display screen. Such an implementation with battery power is well known to those skilled in the art. Prior art flat display devices have been combined with a microcomputer, battery pack, and associated electronics and placed inside the relatively thin display panel enclosures. This has been accomplished in several pocket computers,

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Personal Digital Assistants (PDA), and hand held tablet computers. For example, battery embodiments have been placed inside the IBM ThinkPad™ 710T, Apple Computer Corporation's Newton™, Grid System's Convertible™ 2260, and Dauphin Technology's DTR-1 computers, to name a few. In order to accomplish the above, developers typically implement the required electrical circuits via semiconductor large scale integration (LSI) techniques. This usually results in a microcomputer, main memory, I/O, display drive and other support circuitry integrated into the circuit boards. The microprocessors that could be embodied must be low-voltage and low-current draw versions, such as Intel™ 386/486SL models. A rechargeable battery pack and power management circuitry should be included in the assembly. The battery pack may be removable via a slot on the side of the display panel assembly 2. The main battery pack typically consists of NiCd or newer Nickel Hydride type batteries. A backup battery may also be embodied. The mass memory components, of these hand held display panel assemblies, may consist of a small magnetic 2.5 or 3.5 inch disk hard drives or semiconductor Flash Memory modules. Mass memory of at least 80 MBytes are typically required. If removable, the battery pack and flash memory modules should conform to the PCMCIA Standards. These standards are important for interchangeability among different manufactures. Because of the high level of LSI accomplished today, relatively thin, 1-2 inch thick, display panel assemblies can be realized containing a flat panel display, drive circuitry, microcomputer card, support circuitry and battery pack, within a light weight enclosure. The display panel and computer assembly can then be removed from the support structure 4 and hinge pin 5, as shown in FIG. 1A by a typical removal direction E. This can be accomplished by a simple plug and socket arrangement at the bottom of the display panel assembly. An advantage of this implementation is that two modes of user operation are then possible. One is the desktop operation as described above. The other is a portable mobile display-tablet operation. The user has the option to remove the display-computer unit from the socket, and use it as notebook computer or display-tablet.

FIG. 5 shows alternate embodiment of the desktop workstation system consisting primarily of a base unit 6A, display panel assembly 2, pen/stylus input means 22, keyboard unit 7, a telephone base unit 6B and a telephone handset 26. The computer or workstation is designed for desktop computing and data communications for typical office, home or factory use. All the major functions for computing, communications, and conferencing are made available to user in this desktop arrangement. The base unit 6A, which is similar to the main unit of FIG. 1 and 2, is embodied as a somewhat smaller wedge shape enclosure, which does not take up much desk space and provides an inclined position for pen input. The telephone base unit 6B and keyboard unit 7 are shown here as separate units, so that they can be pushed aside to make room on the desktop. Electrical cables 58 and 9 connect the handset and keyboard to the base unit 6A where most of the computer and electronic components are located. The stylus/pen 22 is connected to the computer in the base unit via an electrical cable 23.

The display panel assembly 2 is physically connected to the base unit 6A via a universal hinge arrangement 4 and an actuator assist means 8. This connection is shown in an exploded view in the figure. The universal hinge means may be embodied in many ways, such as a ball and socket joint arrangement. Thus, the display panel assembly 2 with its display screen 3, is position adjustable in a multiplicity of orientations. A Cartesian coordinate system diagram, defin-

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ing the axes for translations and rotations, is shown in the figure. The panel can be rotated in Inclination angle I, Azimuth angle D, and Roll angle R. Further position adjustment means are added, to provide elevation adjustment along axis y, as shown in double arrow B.

The display panel assembly 2 may be electrically connected to the electronics in the base unit by running a cable through the hinge pin 5 and through the actuator assist means 8 attached to the hinge pin. Sufficient slack in the cable must be provided for the full height of the adjustment range. A slack take-up means should be provided, so that when the panel is in its lower elevation positions, the cable does not bind. The vertical force of actuator assist means should be roughly equal to the weight of the display panel assembly 2. The actuator assist means 8 could be embodied by several alternative devices, including an air spring, a mechanical spring, pneumatic, hydraulic, or electromechanical actuator means. One or more actuators could be included. A means for locking and unlocking the actuator position should be provided within the assist means 4. Such actuators and locking mechanisms are well known to those in the art.

Even though flat panel display assemblies typically weigh only a few ounces, there are several reasons why an actuator assist means may be desirable. If an actuator is not implemented, and the user desires to raise the panel vertically by hand, the user would have to grab one edge of the panel and pull up. If the base unit is not secured to the table or it is not sufficiently heavy, the entire unit may lift off the table. The user would have to place one hand on the base unit and the other on the display panel and pull. Both of the above user actions are undesirable. Using two hands for a simple position adjustment, takes more time to accomplish, and the user may lose his/her's concentration during a computing task. Making the base unit heavy enough so that its weight is larger than the force applied by one's hand is also undesirable. Therefore, a telescoping actuator means 8 should be embodied with a force roughly equivalent to the weight of the display assembly 2, so that the user can easily adjust the position of the display panel by hand. The actuator means may include a locking and unlocking means for temporarily holding the display assembly in the desired position.

An alternate embodiment is shown in FIG. 6A and 6B, showing front views of a desktop unit with a universal ball and socket type support and hinge means 4 attached to the display panel assembly 2, as well as other components. The support and hinge means consist of an L-shaped support member 4C, such that the display panel, when supported near the front of the base unit 6A, can be rotated about the z-axis (shown in FIG. 5 and miss the front edge of the base. The L-shaped member 4C, as shown in FIG. 6A and 6B, is foreshortened (i.e., one side of the L is pointing out of the paper). FIG. 6B shows a front view of the display panel, where the panel is rotated 90 degrees to the typical portrait display orientation. The locking and unlocking part 4A can be a hand knob for applying a force to a hinge means. In this embodiment, the locking knob is facing forward, toward the front of the desktop unit. Other locking/unlocking knob positions are possible. A support post 5A is fixed to the actuator assist means 8 at one end and is attached to the support and hinge means 4 at the other. The assist actuator means 8 may consist of several telescoping arm and post members, in order to provide for greater elevation travel. The actuator means should be capable of collapsing into a unit with relatively small height dimension. This later feature is important because the height dimension of front

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portion base unit is relatively small. As above, the support post can be hollow to allow the electrical cable to be routed through it. An advantage of the FIG. 6A and 6B embodiment is that it provides for both landscape and portrait screen orientations in the same desktop unit, which the user can easily change by hand.

The embodiments of FIG. 5 and FIG. 6 results in a relatively integrated desktop computer and telecommunication system, designed to be used by a person at his/her desk. The system is designed to replace the user's existing telephone and desktop computer, with a general purpose integrated telephony and computing system. An unique aspect of this invention is that the wedge shaped base unit 6A, telephone handset enclosure 6B and the keyboard unit 9 are made to be small separate units, but the display panel assembly 2 can be quite large. The telephone handset and enclosure combination can be slide under the display panel assembly, to save desktop space. This embodiment allows the user to move these separate units out of the way when not in use, and pulled into position when required.

The scope of the invention disclosed here should be determined by the appended claims and their legal equivalents, rather than by the examples given above.

I claim:

1. A portable display monitor wherein a user has the option to rest the monitor on a roughly horizontal surface of a desk or table, so that its screen is viewable by one or more users, the display monitor comprising:

- a. a flat panel display assembly defining a display screen and associated display electronics;
- b. a control electronics means electrically interfaced to said flat panel display electronics;
- c. a support hinge means directly connected to said flat panel display assembly;
- d. a multi-section telescoping post-like structure attached to said support hinge means, such that said flat panel display assembly can be pushed down and pulled up by the user, for elevation position adjustments; and
- e. a base unit adapted to resting onto horizontal surfaces, wherein the base unit is connected to the bottom portion of said multi-section telescoping post-like structure, wherein the user has the option to rest the base unit supporting elements (a)-(e) onto the roughly horizontal surface or a desk or table.

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2. A portable display monitor as recited in claim 1, in which said multisection telescoping post-like structure includes a force actuator means applying a vertical upward force along the y-axis, wherein the force of said actuator means approximates the weight of said display panel assembly and said support hinge means, and wherein said actuator means assists the user when pulling upward on said flat panel display assembly.

3. A portable display monitor as recited in claim 1, in which said flat panel display assembly is adapted to include a microcomputer system and a battery power supply, wherein said flat panel display assembly and said microcomputer system is adapted to be physically removable, such that said flat panel display assembly and computer system can be operational without connection to elements (c)-(e).

4. A portable display monitor as recited in claim 1, in which said support hinge means is adapted to azimuth angle rotation adjustment of said flat panel display assembly, wherein the user has options to adjust the azimuth angle to a desired position by hand.

5. A portable display monitor as recited in claim 1, in which said support hinge means is adapted to roll angle rotation adjustment of said flat panel display assembly, wherein the user has options to adjust the roll angle to a desired position by hand.

6. A portable display monitor as recited in claim 1, in which said support hinge means is adapted to a universal ball and socket hinge support means for said flat panel display assembly can be adjusted in orientation in a multiplicity of rotations other than said inclination, azimuth and roll directions.

7. A portable display monitor as recited in claim 1, in which said electronic control means is comprised of a microcomputer system, and further comprising a telephone means interfaced to said micro computer system, wherein the user has options to have voice or data communications operations to and from an external communication means.

8. A portable display monitor as recited in claim 1, further comprising a microcomputer system running operating system programs, forming a personal computer system for running application programs.

9. A portable display monitor as recited in claim 8, further comprising a keyboard connection means.

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US006326955B1

(12) **United States Patent**
Ditzik

(10) Patent No.: **US 6,326,955 B1**
(45) Date of Patent: ***Dec. 4, 2001**

(54) **INFORMATION DEVICE WITH
ADJUSTABLE FLAT PANEL SCREEN**

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

This patent is subject to a terminal dis-
claimer.

4,846,434 * 7/1989 Krogsrud 248/280.1
4,859,092 * 8/1989 Makita 400/83
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Primary Examiner—Lun-Yi Lao

(57) **ABSTRACT**

A relatively small transportable desktop computer/workstation with a display panel assembly (2) in combination with a microprocessor or controller (44) is made display screen position adjustable, in inclination angle, azimuth angle and elevation translation movements. The workstation can have a pen or stylus touch screen input function (36) added, so that a user or operator can write, draw and sketch directly onto the screen in a natural manner. The workstation can be placed on top of a desk or table providing an ergonomic man-machine interface for information communications between individual users via a communications network. A keyboard (7, 42), voice/speaker telephone (48), mouse or trackball input unit (46), and communications modem (42) may be added to the workstation. The flat panel display, pen input device and microprocessor can be combined into an assembly, which can be removed from the main body for portable mobile computing operation.

(21) Appl. No.: **09/510,955**

(22) Filed: **Feb. 22, 2000**

Related U.S. Application Data

(63) Continuation of application No. 08/937,258, filed on Sep. 13, 1997, which is a continuation of application No. 08/288,882, filed on Aug. 10, 1994, now Pat. No. 5,668,570, which is a continuation-in-part of application No. 08/084,011, filed on Jun. 29, 1993, now abandoned.

(51) Int. Cl.⁷ **G09G 3/00**

(52) U.S. Cl. **345/173; 345/905; 361/681;
248/920**

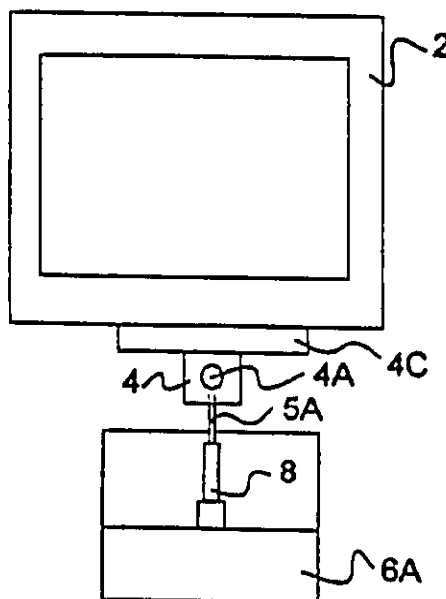
(58) Field of Search **345/173, 176,
345/179, 180, 174, 905; 248/817, 918,
920, 921, 923, 922, 919; 361/679, 688,
724, 680-682; 178/18.01-18.11, 19.01-19.07**

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6 Claims, 5 Drawing Sheets

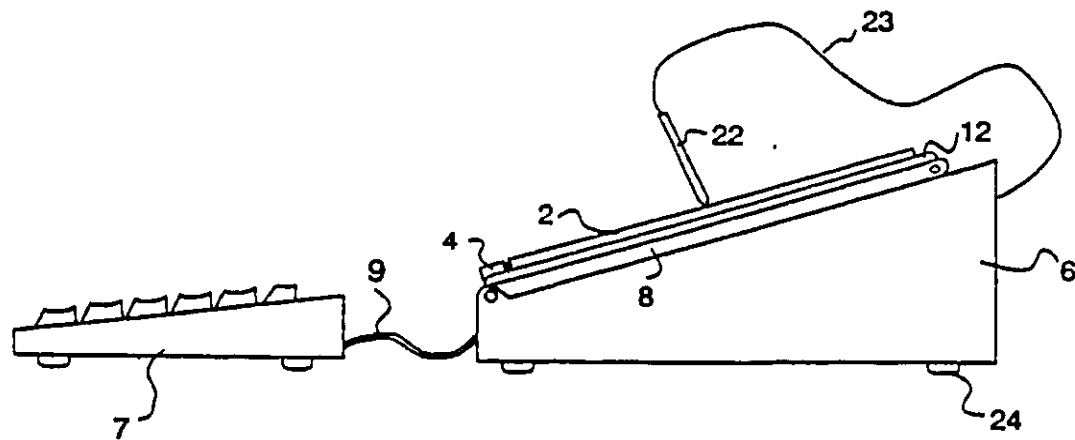
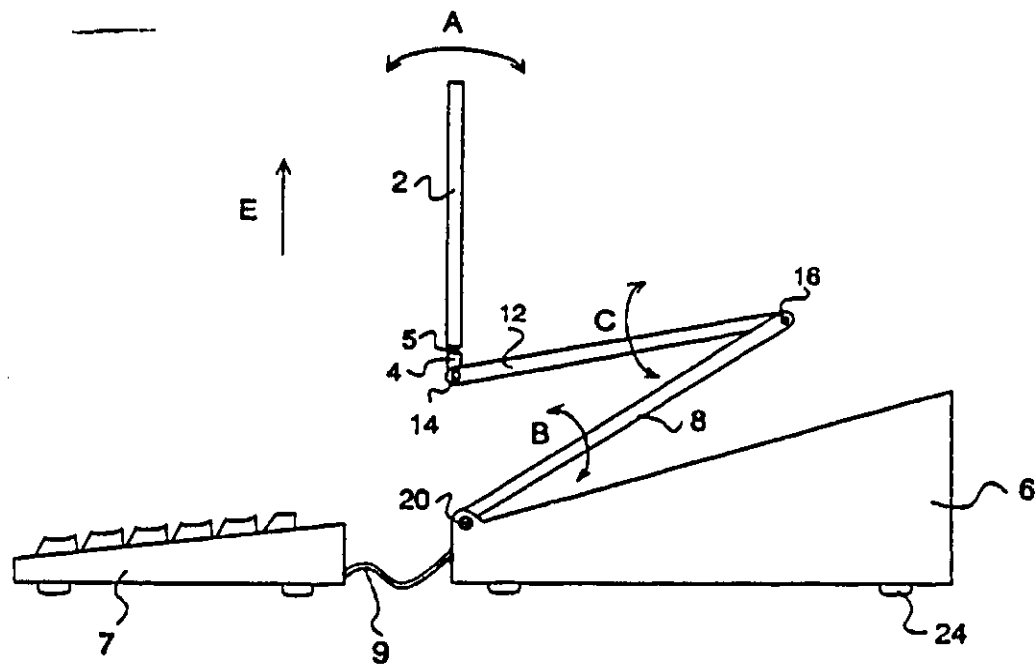


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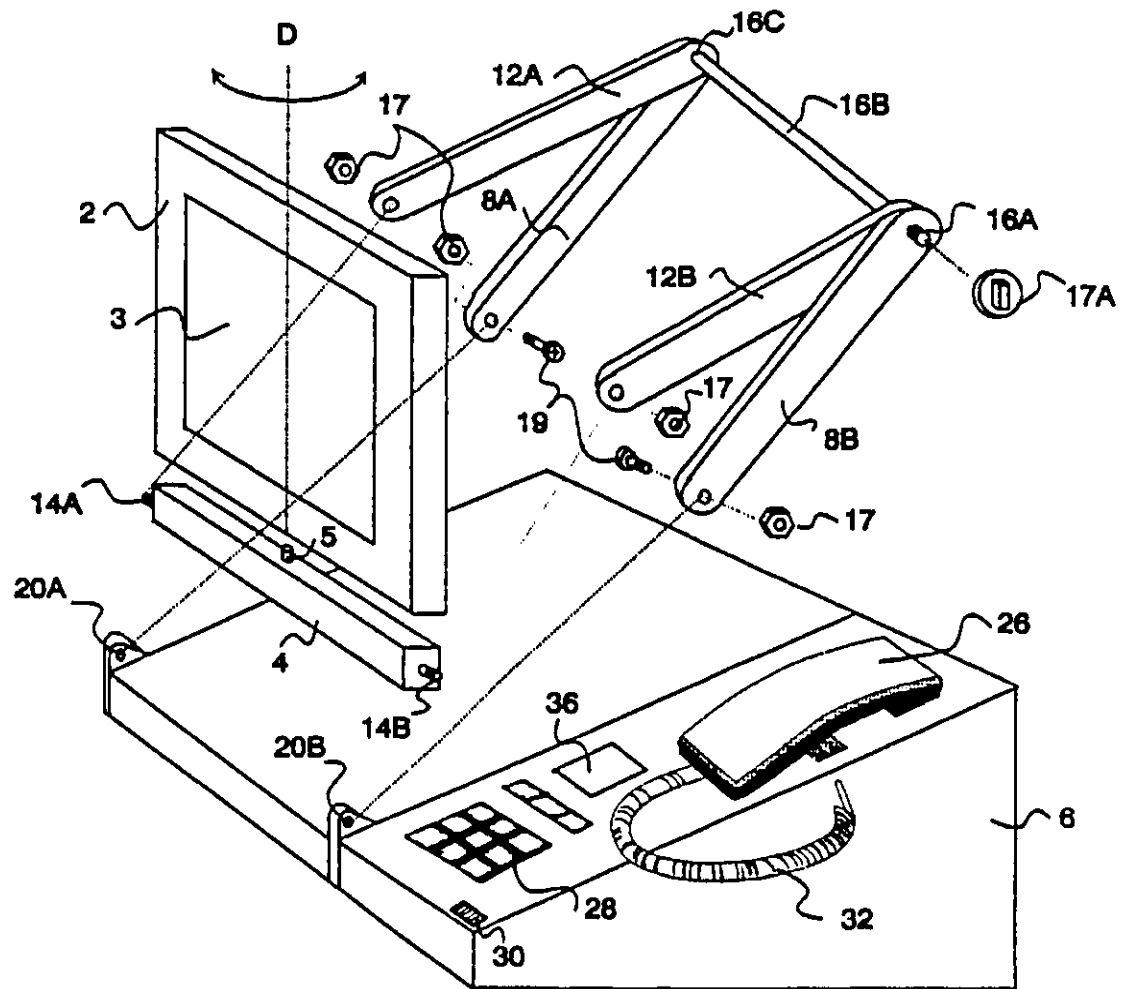


FIG. 2

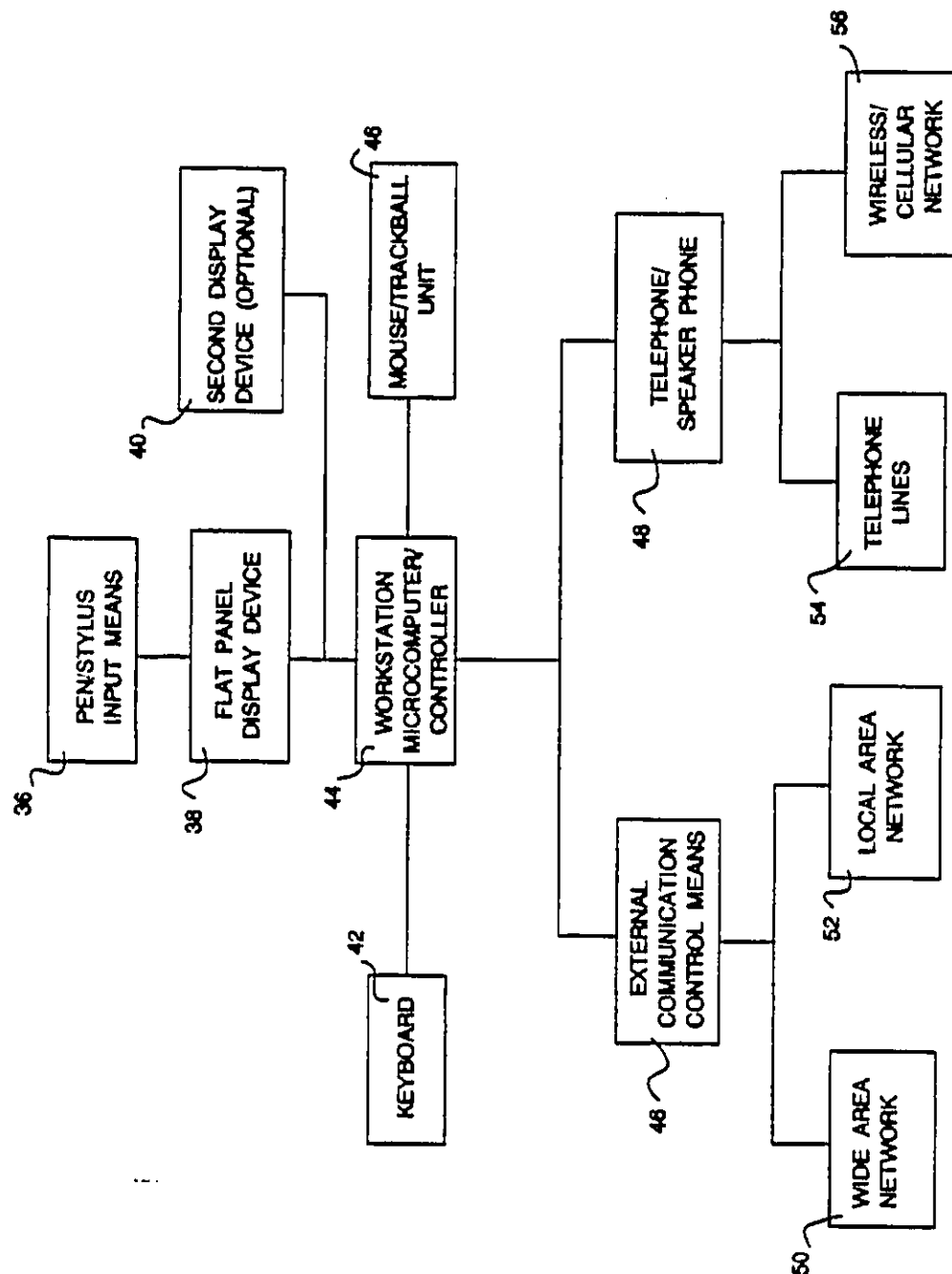


FIG. 3

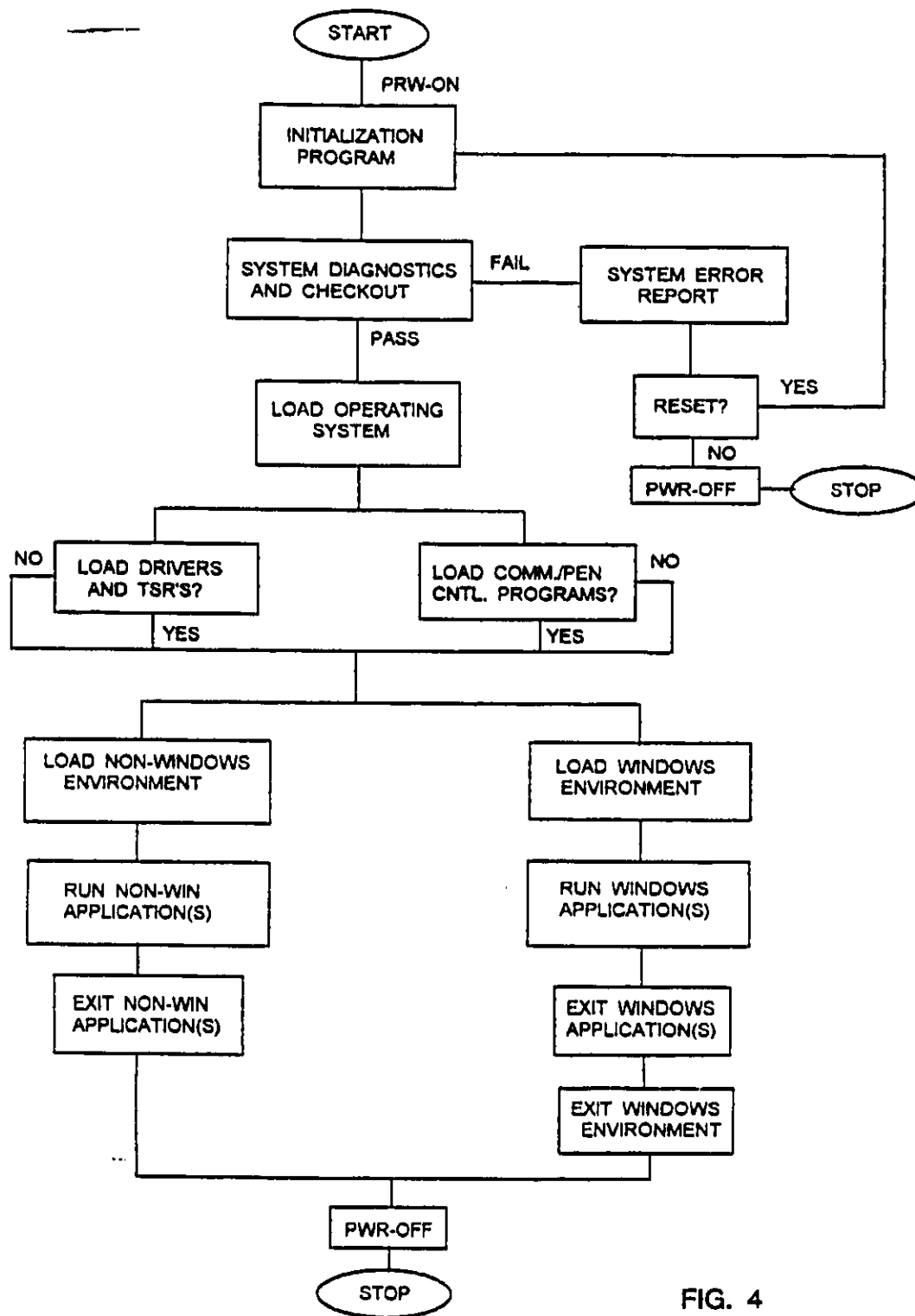


FIG. 4

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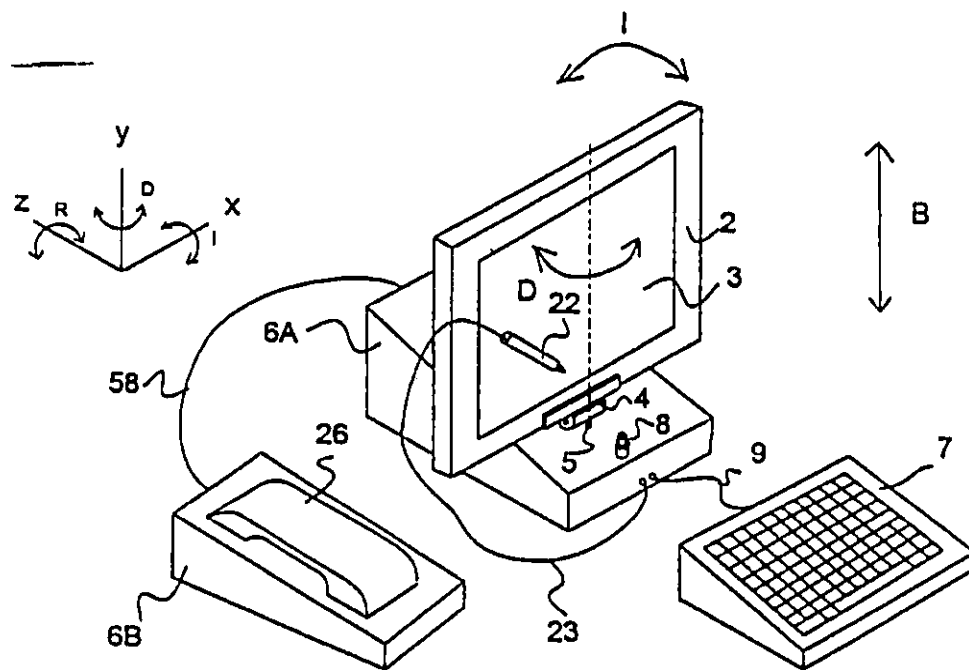


FIGURE 5

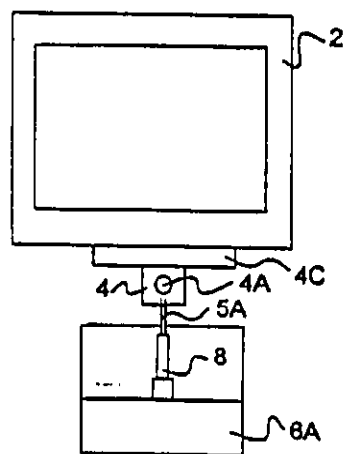


FIG. 6A

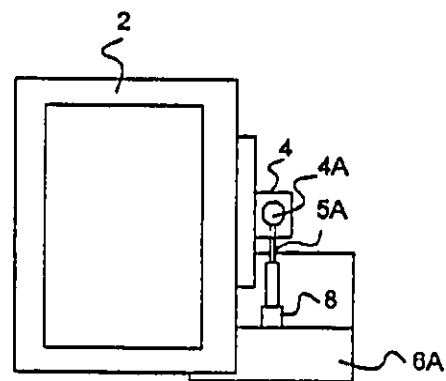


FIG. 6B

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INFORMATION DEVICE WITH ADJUSTABLE FLAT PANEL SCREEN

This application is a continuation of application Ser. No. 08/937,258 filed Sep. 13, 1997 and is hereby incorporated in by reference. Application Ser. No. 08/937,258 is a continuation of application Ser. No. 08/288,882 filed Aug. 10, 1994 that issued as U.S. Pat. No. 5,668,570, which was a CIP of application 08/084,011 filed on Jun. 29, 1993, abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to desktop or portable computers with flat panel displays. In particular it relates to personal computers that will lie on a desk or table, which a human operator will use to: (1) enter keyboard data, pen or voice data/information; (2) view displayed information and/or (3) hear audio/voice information.

2. Description of the Prior Art

Heretofore, portable computers with flat panel displays were embodied in a "clamshell" type design. When these prior art computers are ready for use, the display panel is unfolded to a roughly vertical orientation. The attached keyboard and computer enclosure form the bottom half of the clamshell. For portable transport, the flat panel display is folded down over the keyboard and computer enclosure. This prior art configuration has several shortcomings. First, since the unit sits on a desk or table, the screen is always at a lower elevation than the eye level of the person sitting and operating the computer. Thus the person must continually look down to the display. Over long periods of time, this will cause neck and back strain on the user. Secondly, if a pen/stylus input means is added to the display screen, the roughly vertical operating orientation is inconvenient and ergonomically incorrect when the user is handwriting or sketching. If the user tries to hold his/her arm up to write on a vertical screen, the users arm will tire. Over long periods of writing on a vertical screen, this awkward position will cause strain on one's wrist. Even if the user is willing to hold his/her hand up to write on the vertical screen, it may not be physically secure for the user's hand pressure. Thirdly, the prior art clamshell design does not provide elevation adjustment or azimuth angle adjustment means. This restricts the ergonomic usability of the prior art computer and display units.

For example, U.S. Pat. No. 4,859,092 of Makita discloses a portable typewriter and display unit. However, a single pair of pivoting arms connect the display unit to the main body. When its display unit is raised to its highest elevation, the distance from the user's eyes to the display screen is large. Therefore, middle aged users who are near sighted, will have difficulty in viewing the screen. No pen/stylus input mean is disclosed, but even if one is added, the display unit would not provide a physically secure writing surface. The Makita does not provide a means of placing equal and opposite restraining force onto the display unit. U.S. Pat. No. 4,624,434 of Lake discloses a tiltable display terminal, but no display unit elevation adjustment is taught. Again no pen input means is disclosed, and if one is added, the unit would not be physically stable for normal hand/arm forces applied by the user. U.S. Pat. No. 5,115,374 of Hongoh teaches a laptop portable computer with a facsimile function. Hongoh discloses a touch panel screen, but no pen input means, and no vertical elevation adjustment of its display unit is taught. In order to provide a horizontal display orientation, the display unit must be detached from the main body and set

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back, in reverse orientation, to the connector sockets on the main body, which is a severe disadvantage.

Several prior art pen computer units exist. However, their display screens are fixed to their enclosure to form a flat tablet. They are designed for the mobile user market. This limits their use for desktop pen/stylus computing environments. No prior art has solved the problem of a personal computer for the office environment, capable of standard computing, pen computing, and voice telephone communications.

The invention disclosed herein solves the above problems by providing an ergonomic designed desktop system that is capable of several important computer and communications functions. It provides a display panel assembly, pen/stylus input unit, multiple support arms, and a main unit in a roughly wedge shape. The display panel assembly can be adjusted in inclination angle, azimuth angle and elevation. Thus invention overcomes the problems of the prior art. For example, the display panel of the invention can be easily adjusted by hand in elevation to a height roughly of the user's eye level. The user does not have to look down to see the screen when in normal PC-keyboard operation. If the unit is used as a pen/stylus computer, the display panel can be folded by hand to a physically secure position, at an inclination angle that is ergonomically correct for handwriting and sketching. Finally, the display screen can be physically adjusted in many orientation combinations, including azimuth angles, inclination angles and elevation translations. Thus the invention can be used in a wide range on office desktop positions and by a wide range of users and orientations.

SUMMARY OF THE INVENTION

The disclosed invention overcomes the shortcomings of the prior art by providing display screen adjusting means for desktop computers and terminals, such that the entire apparatus is sufficiently small to be portable or transportable. The invention disclosed herein provides an easy to use desktop workstation, to which the human user can adjust its screen for many screen positions. In addition, the workstation can fold down for transport. The workstation may also include external communication means such as voice/data modem and/or telephone means.

Accordingly an object of the invention is to provide small compact workstation for the office, having an array of useful functions and capabilities at the finger tips of the human user sitting at his/her desk. Functions may include pen/stylus input means, computer means, display device(s), mass memory devices, keyboard, mouse, speaker phone, network interface and modem.

Another object of the invention is to give the user a voice and data communications capability at the desktop, capable of standard text/graphics computing, as well as voice/video/pen communication to others individuals or computers, via modem or network (LAN/WAN) interfaces.

Still another object of invention is to provide the user with an ergonomic workstation that can be adjusted to a wide range of positions and orientations, such that there will be a reduction or elimination of body stress and fatigue by the user, over long periods of use.

Still another object of the invention is to provide a modular desktop workstation such that the user can configure the workstation to how he/she works, or to their choice at a particular time. For example, the user will have the choice of using a detached keyboard, pen/stylus input, mouse, trackball, handset telephone, or speaker telephone, depending on his/her wishes for accomplishing a particular task.

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Still another object of the invention is to provide a unit that is small and light enough for the user to easily transport it to other locations. Other objects of the invention will become evident by reading the following invention descriptions and inspection of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a side view of the desktop workstation with the display panel assembly oriented vertically and somewhat raised from its lowest position.

FIG. 1B is a side view of the desktop with the display panel assembly folded to its lowest inclined position, with a stylus/pen input means.

FIG. 2 is exploded perspective view of the desktop workstation with a telephone means placed on one side.

FIG. 3 is a general block diagram of the electrical elements of the invention.

FIG. 4 is a general flow diagram of the software that may execute on the workstation's digital computing means.

FIG. 5 is a perspective view of a display monitor associated apparatus.

FIGS. 6A & 6B are front views of display monitors with two different screen roll angles.

DETAILED DESCRIPTION

The invention can be described with reference to FIGS. 1A and 1B shows a desktop workstation from the side in two different display screen orientations and modes of operation. The term desktop workstation is defined to be an interactive man-machine or man-computer interface, in which a human being can enter and view data/information. The workstation or interface may or may not include a digital computing means. A display panel assembly 2 is attached to a support structure 4 via a hinge pin 5. The support structure 4 is connected to a support arm 12 via a hinge means 14. The display panel assembly 2 includes a relatively thin display device further defining a viewing screen. Examples of the possible display technologies are Liquid Crystal Displays (LCD), electro-luminescent, plasma panel, and field emission displays. They may be monochrome or color, and they could be light modulator or light emitter types of displays. LCD's are most commercially available flat panel display devices, available in a wide variety of sizes, shapes, resolutions and other characteristics.

Typical of these LCD's is the Sharp Electronics Corporation's LM64P90 and LM64K90 monochrome LCD's. They have a 640x480 display pixel format, a viewing area of 196x148 mm, a dot pitch of 0.30x0.03 mm, and cold cathode fluorescent backlight. The former has 150 ms rise plus fall response time, a transmissive viewing mode, 50 Nits brightness, and 13:1 contrast ratio. The latter has a 250 ms rise plus fall response time, a transmissive viewing mode, 35 Nits brightness, and 10:1 contrast ratio. For many applications, color LCD's are required. Sharp Electronics Corp. makes several direct-view color Thin Film Transistor (TFT) LCD modules. Typical specifications for their LQ10DH11 product are a 640 (x3)x480 display pixel format, 211x158 mm viewing area, a 0.33(0.11x3)x0.33 mm dot pitch, a hot cathode fluorescent backlight.

The display panel assembly 2 is free to rotate through large inclination angles (at least 90 degrees), represented by rotation A, about the hinge axis of hinge means 14. Support arms 12 and 8 in turn connect the display panel to the workstation a main unit 6. The main unit may include an enclosure or housing for control electronics including a

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digital computer, microprocessor or other control means. The display panel assembly 2 may be electrically connected to electronics located in the main unit 6, via an electrical cable routed inside the support structure 4 and support arms 12 and 8, or via a cable routed externally to the main unit. The size of main unit 6 should be small, so as to not present a large "foot print" on the desk or table. The unit should be easily carried by one person. The invention may be powered by light weight batteries or it may be an AC powered workstation.

The support arm 8 is attached to support arm 12 by a hinge means 16, such that the latter arm can be rotated through rotation C about the axis of the hinge means, as shown in FIG. 1A. Support arm 8 is attached to the main unit 6 by hinge means 20, such that the arm can rotate through large angles as shown in rotation B about the axis of the hinge means. Thus the above mechanical elements can work in combination, and the user is can adjust the orientation of the display panel assembly 2 in both inclination angle and elevation. The friction of each hinge is such that the user can adjust the orientation by hand, and its position is either self-locking or can be adjusted to lock in position. The lengths of the support arms 8 and 12 should be selected to provide the desired display screen elevation and forward viewing positions. Many different combinations of lengths may be embodied.

Several methods can be implemented to give the user to capability to adjust the screen in azimuth angle. One technique is to rotationally attach the display panel assembly 2 to a support structure 4 via a cylindrical hinge pin 5, so that the display can rotate through azimuth angles. The hinge pin 5 can be made hollow so that electrical conductors can be routed through it to the support structure 4. Another method would be to place the main unit on stationary base structure via a lazy-susan structure. Rubber feet may be placed under the main unit, as shown in the figure. The weight of the display panel assembly 2 should be as low as possible, and the mass of the main unit and its electronics should be large enough so that if the display assembly is adjusted in the extreme forward position, the unit will remain physically and gravitationally stable. A computer keyboard unit 7 is shown connected to the main unit 6 via an electrical cable 9. The computer keyboard unit 7 may be attached or detached. If it is a detached keyboard, the electrical signals may be transmitted to the computer via wires or electromagnetic radiation means.

FIG. 1B shows the workstation of in FIG. 1A, except the display panel is folded down to its lowest inclined position and a stylus input means 22 is included. The stylus input means is defined to be a stylus or pen position encoding device that encodes, in two or three dimensions, the position of a hand-held stylus, as the user moves it over an active area corresponding to the display screen. The screen of the display panel is facing upward and at a convenient inclined angle for user hand writing, drawing and sketching with the stylus or pen. An electrical wire/cable 23 may be used to connect the pen/stylus to the control electronics in the main unit. A natural inclined angle of the screen for stylus/pen data input is roughly 30 degrees from the horizontal. However, the display panel assembly may be locked into position at a multiplicity of orientations.

Another embodiment is shown in FIG. 2, which presents a perspective view of another embodiment of the invention, where several elements are shown in exploded view, for clarity. A display panel assembly 2 including its display screen 3 is rotationally connected to the support structure 4 via the cylindrical hinge pin 5. The display panel assembly

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is then free to rotate through wide azimuth angles D as shown. The support structure 4 is connected to support arm pairs 12A and 12B via hinge means 14A and 14B. The cylindrical shafts of hinges 14A and 14B, which may be threaded, fit in the round holes of the support arm pairs 12A and 12B. Support arm pair 8A and 8B is attached to the previous arm pair at hinge elements 16A, 16B and 16C, where element 16B is a long shaft, the ends of which may be threaded. The other ends of support arm pair 8A and 8B are attached to the main unit 6 via hinges 20A and 20B. The friction of each hinge means may be adjusted by a threaded shaft or screw 19 and a standard nut 17 or a finger tightened nut/knob 17A. The friction should be sufficient to support the display panel assembly under the gravitational and normal hand writing/sketching forces.

As shown in FIG. 2, a telephone unit may be added or integrated into the desktop workstation. A telephone handset 26 and cord 32 may be located either side of the workstation. A telephone keypad 28 should be placed in a convenient location of the user. For a hands-free telephone operation, a microphone 30 and speaker 36 may be included. The telephone unit may be attached or detached from the main unit. The telephone may function during workstation operation and/or independently of the workstation operation. A computer keyboard, mouse or trackball devices may be included, in addition to the stylus/pen input means. All controls should be designed to be simple and easy to use.

FIG. 3 shows a block diagram of the basic electrical elements of the computer workstation. The pen/stylus input means' electronics 36 can be interfaced directly to flat panel display device electronics 38. Examples of available products that have combined these functions are the Super-K™ display tablet from SuperScript Inc., Video Tablet from Kurta Corporation, and the PL-100 Integrated Tablet for Wacom Technology Corp. Typically, these products are connected to a controller card in the computer's I/O bus, via a cable. Specifications for such display-tablet include: active area 7.56 by 5.67 inches, accuracy ± 0.02 inch, resolution 1016 PPI, data transfer rate 270 coordinate pairs/sec., pen slew rate up to 135 IPS without significant distortion, and stylus/pen weight 15 grams.

As shown in the figure the flat panel display is electrically connected to the workstation microcomputer/controller 44. The microcomputer may be any one of several commercially available products, such as the Intel™ 86286, 86386 or 86486 processors, Motorola Corporation's 68030 or 68040 processors, as well as several others. If the workstation is to be battery powered, then low voltage (3V) low-power microprocessors should be used. The microcomputer/controller 44 may be embodied by several means.

One available microcomputer system that may be used, is the Moby Brick product manufactured by Ergo Computing of Peabody Mass. The Moby Brick product consists of a 386/486 CPU, with 4 to 32 MB RAM, hard disk s from 170 MB to 1 GB, built in video controller, a 3.5 inch 1.44 MB floppy drive, two serial ports, one parallel port and one ISA 16 bit half length card slot. All the above is built into a 7.9x11.3x3.3 inch module that weighs 8.7 lbs. The CPU required by the invention may be a 20 MHz 386SX, 33/40 MHz 386DX, or the 33 MHz 486DX. Either internal or external modems may be embodied in to the system. An optional expansion chassis may be added to the system with four slots for ISA cards.

FIG. 4 shows a general flow diagram of typical stored program software that may execute in the microcomputer or processor 44. Many commercial available operating

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systems, window environment and application software are available to run in the microcomputer. Typical operating systems that could be used include Microsoft Corporation's MS-DOS™, IBM's OS/2™, Go Corporation's Pen Point or various companies' UNIX products. Possible windowing environments include Microsoft's Windows™ 3.x and Windows for Pen™, Hewlett-Packard's New Wave™, or X-Windows from various companies. Software may be pen centric like Pen Point™ software or it may be just pen/mouse aware. As shown in FIG. 4, after a standard power up and the system diagnostics and checkout is completed the operating system is loaded. Depending on the desired configuration a number of device driver, TSR's, communication programs and pen/stylus control programs may be loaded. The workstation should be capable of either running windows or non-windows environments.

The microcomputer/controller 44 of FIG. 3 includes associated support electronics, I/O devices and power supply. All the above should be compact in size, so that the size of the overall desktop workstation is as small as practical. The advantage of small size is that it provides a smallest footprint of the desk. This is important in office environments, where desk space is at a premium. The main unit's footprint dimensions, on the desktop, could be in the range of 15 by 13 inches, depending of the size of the screen and whether of telephone handset is included.

The keyboard function 42 may be electrically connected to the microcomputer/controller 44. A standard mouse/trackball unit 46 may be connected to the microcomputer via an I/O card or serial port in the standard manner. Both the pen and mouse/trackball interfaces may be desirable in certain applications. An external communication means 46 is connected to the microprocessor. The communications means could be embodied by a communications I/O card, internal/external modem or other communication means. However embodied, the workstation shall have the capability to communicate data (text, graphics, video, and voice) interactively on either Wide Area Networks (WAN) 50 or Local Area Networks (LAN) 52. The WAN in its simplest form may consist for two workstations connected to each other via internal/external modems over standard or hi-speed telephone lines.

Either an external or internal (built-in) telephone/speaker phone 48 may be connected to the microprocessor/controller. It may be integrated into the workstation or embodied as a stand alone device, depending on the user's requirements. The telephone/speaker phone may also be connected to ordinary telephone lines 54 or wireless/cellular networks 56. The primary purpose of the external communication means of the workstation is to provide two way interactive text, graphics (including pen/stylus), video and voice/audio communication to: (1) other users operating similar workstations (at the same time or unattended), and/or (2) one or more computers on a network of computers or terminals. Other standard computing and communication components may be added to the invention that are obvious to those skilled in the art.

In another embodiment, the microprocessor and support electronics 44 can be located at the display panel assembly 2, instead of the main unit 6. For example, they may be located on one or more printed circuit boards surrounding and behind the display screen. Such an implementation with battery power is well known to those skilled in the art. Prior art flat display devices have been combined with a microcomputer, battery pack, and associated electronics and placed inside the relatively thin display panel enclosures. This has been accomplished in several pocket computers,

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Personal Digital Assistants (PDA), and hand held tablet computers. For example, battery embodiments have been placed inside the IBM ThinkPad™ 710T, Apple Computer Corporation's Newton™, Grid System's Convertible™ 2260, and Dauphin Technology's DTR-1 computers, to name a few. In order to accomplish the above, developers typically implement the required electrical circuits via semiconductor large scale integration (LSI) techniques. This usually results in a microcomputer, main memory, I/O, display drive and other support circuitry integrated into the circuit boards. The microprocessors that could be embodied must be low-voltage and low-current draw versions, such as Intel™ 386/486SL models.

A rechargeable battery pack and power management circuitry should be included in the assembly. The battery pack may be removable via a slot on the side of the display panel assembly 2. The main battery pack typically consists of NiCd or newer Nickel Hydride type batteries. A backup battery may also be embodied. The mass memory components, of these hand held display panel assemblies, may consist of a small magnetic 2.5 or 3.5 inch disk hard drives or semiconductor Flash Memory modules. Mass memory of at least 80 MBytes are typically required. If removable, the battery pack and flash memory modules should conform to the PCMCIA Standards. These standards are important for interchangeability among different manufacturers. Because of the high level of LSI accomplished today, relatively thin, 1-2 inch thick, display panel assemblies can be realized containing a flat panel display, drive circuitry, microcomputer card, support circuitry and battery pack, within a light weight enclosure. The display panel and computer assembly can then be removed from the support structure 4 and hinge pin 5, as shown in FIG. 1A by a typical removal direction E. This can be accomplished by a simple plug and socket arrangement at the bottom of the display panel assembly. An advantage of this implementation is that two modes of user operation are then possible. One is the desktop operation as described above. The other is a portable mobile display-tablet operation. The user has the option to remove the display-computer unit from the socket, and use it as notebook computer or display-tablet. FIG. 5 shows alternate embodiment of the desktop workstation system consisting primarily of a base unit 6A, display panel assembly 2, pen/stylus input means 22, keyboard unit 7, a telephone base unit 6B and a telephone handset 26. The computer or workstation is designed for desktop computing and data communications for typical office, home or factory use. All the major functions for computing, communications, and conferencing are made available to user in this desktop arrangement. The base unit 6A, which is similar to the main unit of FIGS. 1 and 2, is embodied as a somewhat smaller wedge shape enclosure, which does not take up much desk space and provides an inclined position for pen input. The telephone base unit 6B and keyboard unit 7 are shown here as separate units, so that they can be pushed aside to make room on the desktop. Electrical cables 58 and 9 connect the handset and keyboard to the base unit 6A where most of the computer and electronic components are located. The stylus/pen 22 is connected to the computer in the base unit via an electrical cable 23.

The display panel assembly 2 is physically connected to the base unit 6A via a universal hinge arrangement 4 and an actuator assist means 8. This connection is shown in an exploded view in the figure. The universal hinge means may be embodied in many ways, such as a ball and socket joint arrangement. Thus, the display panel assembly 2 with its display screen 3, is position adjustable in a multiplicity of

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orientations. A Cartesian coordinate system diagram, defining the axes for translations and rotations, is shown in the figure. The panel can be rotated in Inclination angle I, Azimuth angle D, and Roll angle R. Further position adjustment means are added, to provide elevation adjustment along axis y, as shown in double arrow B.

The display panel assembly 2 may be electrically connected to the electronics in the base unit by running a cable through the hinge pin 5 and through the actuator assist means 8 attached to the hinge pin. Sufficient slack in the cable must be provided for the full height of the adjustment range. A slack take-up means should be provided, so that when the panel is in its lower elevation positions, the cable does not bind. The vertical force of actuator assist means should be roughly equal to the weight of the display panel assembly 2. The actuator assist means 8 could be embodied by several alternative devices, including an air spring, a mechanical spring, pneumatic, hydraulic, or electromechanical actuator means. One or more actuators could be included. A means for locking and unlocking the actuator position should be provided within the assist means 4. Such actuators and locking mechanisms are well known to those in the art.

Even though flat panel display assemblies typically weigh only a few ounces, there are several reasons why an actuator assist means may be desirable. If an actuator is not implemented, and the user desires to raise the panel vertically by hand, the user would have to grab one edge of the panel and pull up. If the base unit is not secured to the table or it is not sufficiently heavy, the entire unit may lift off the table. The user would have to place one hand on the base unit and the other on the display panel and pull. Both of the above user actions are undesirable. Using two hands for a simple position adjustment, takes more time to accomplish, and the user may lose his/her's concentration during a computing task. Making the base unit heavy enough so that its weight is larger than the force applied by one's hand is also undesirable. Therefore, a telescoping actuator means 8 should be embodied with a force roughly equivalent to the weight of the display assembly 2, so that the user can easily adjust the position of the display panel by hand. The actuator means may include a locking and unlocking means for temporarily holding the display assembly in the desired position.

An alternate embodiment is shown in FIGS. 6A and 6B, showing front views of a desktop unit with a universal ball and socket type support and hinge means 4 attached to the display panel assembly 2, as well as other components. The support and hinge means consist of an L-shaped support member 4C, such that the display panel, when supported near the front of the base unit 6A, can be rotated about the z-axis (shown in FIG. 5) and miss the front edge of the base. The L-shaped member 4C, as shown in FIG. 6A and 6B, is foreshortened (i.e., one side of the L is pointing out of the paper). FIG. 6B shows a front view of the display panel, where the panel is rotated 90 degrees to the typical portrait display orientation. The locking and unlocking part 4A can be a hand knob for applying a force to a hinge means. In this embodiment, the locking knob is facing forward, toward the front of the desktop unit. Other locking/unlocking knob positions are possible. A support post 5A is fixed to the actuator assist means 8 at one end and is attached to the support and hinge means 4 at the other. The assist actuator means 8 may consist of several telescoping arm and post members, in order to provide for greater elevation travel. The actuator means should be capable of collapsing into a unit with relatively small height dimension. This later fea-

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ture is important because the height dimension of front portion base unit is relatively small. As above, the support post can be hollow to allow the electrical cable to be routed through it. An advantage of the FIGS. 6A and 6B embodiment is that it provides for both landscape and portrait screen orientations in the same desktop unit, which the user can easily change by hand.

The embodiments of FIG. 5 and FIG. 6 results in a relatively integrated desktop computer and telecommunication system, designed to be used by a person at his/her desk. The system is designed to replace the user's existing telephone and desktop computer, with a general purpose integrated telephony and computing system. An unique aspect of this invention is that the wedge shaped base unit 6A, telephone handset enclosure 6B and the keyboard unit 9 are made to be small separate units, but the display panel assembly 2 can be quite large. The telephone handset and enclosure combination can be slide under the display panel assembly, to save desktop space. This embodiment allows the user to move these separate units out of the way when not in use, and pulled into position when required.

The scope of the invention disclosed here should be determined by the appended claims and their legal equivalents, rather than by the examples given above.

I claim:

1. A portable information device comprising:
 - a. a flat panel display assembly comprised of control electronics and display device with display screen;
 - b. tilting hinge means attached to said portable flat panel display monitor assembly for inclination orientation adjustments;

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c. a support structure comprised of a first and second column-like members, wherein said first column-like member is attached to said tilting hinge means, and wherein one column-like member has a larger diameter than the other column-like member, such that one of the members can slide over the other in a telescoping manner for raising and lower the position of said display screen; and

d. a passive base support structure attached near the bottom of said second column-like member for stable placement onto a roughly horizontal surface of a desk or table like structure.

2. A portable information device, as recited in claim 1, in which said first and second column-like members are roughly cylindrical in shape.

3. A portable information device, as recited in claim 1, further comprising a mechanical locking means attached to said support structure members for locking said two column-like members to a fixed stable position thus fixing said flat panel display monitor assembly in position.

4. A portable information device, as recited in claim 1, in which said flat panel display assembly is adapted to be easily removable from said support structure.

5. A portable information device, as recited in claim 1, in which said support structure and said flat panel display assembly is adapted for portrait to landscape position adjustments.

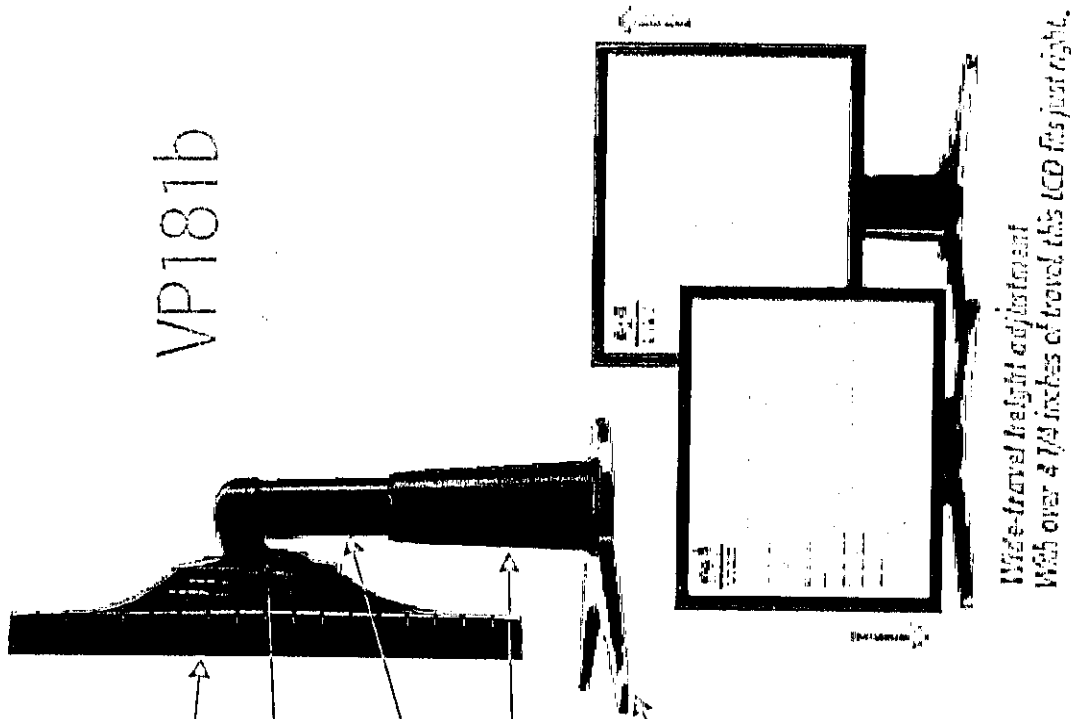
6. A portable information device, as recited in claim 1, in which said a passive base support structure has a roughly wedge shape.

* * * * *

C

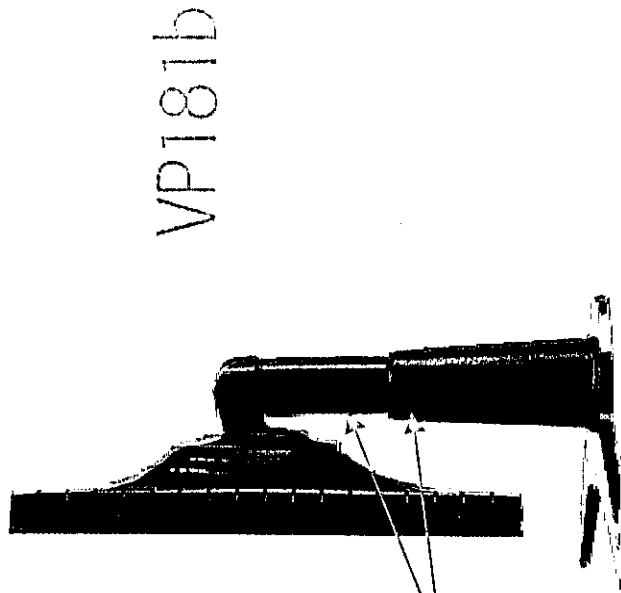
Ditzik US Patent 6,326,955 - ViewSonic

1. A portable information device comprising:
 - a. a flat panel display assembly comprised of control electronics and display device with display screen;
 - b. tilting hinge means attached to said portable flat panel display monitor assembly for inclination orientation adjustments;
 - c. a support structure comprised of a first and second column-like members, wherein said first column-like member is attached to said tilting hinge means, and wherein one column-like member has a larger diameter than the other column-like member, such that one of the members can slide over the other in a telescoping manner for raising and lowering the position of said display screen; and
 - d. a passive base support structure attached near the bottom of said second column-like member for stable placement onto a roughly horizontal surface of a desk or table like structure.



Ditzik US Patent 6,326,955 - ViewSonic

2. A portable information device, as recited in claim 1, in which said first and second column-like members are roughly cylindrical in shape.

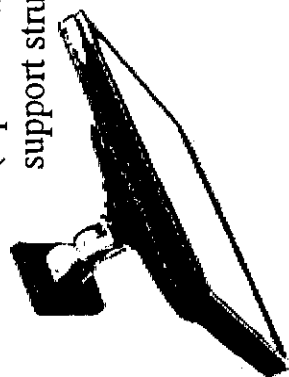


VP181b

Ditzik US Patent 6,326,955 - ViewSonic

4. A portable information device, as recited in claim 1, in which said flat panel display assembly is adapted to be easily removable from said support structure.

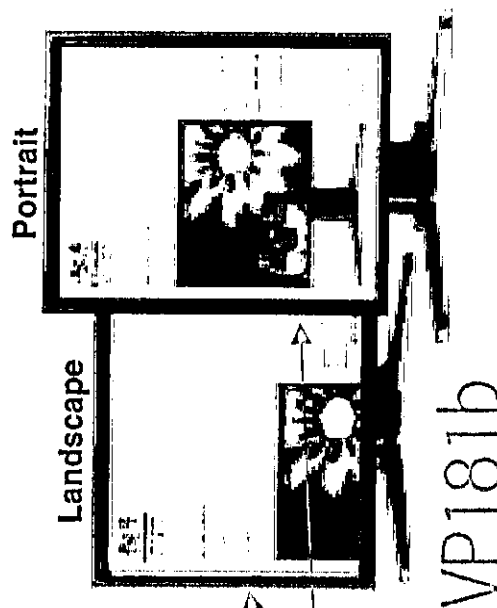
(Optional wall mount bracket, original support structure removed)



Universal Wall Mount
Item: WM-U1

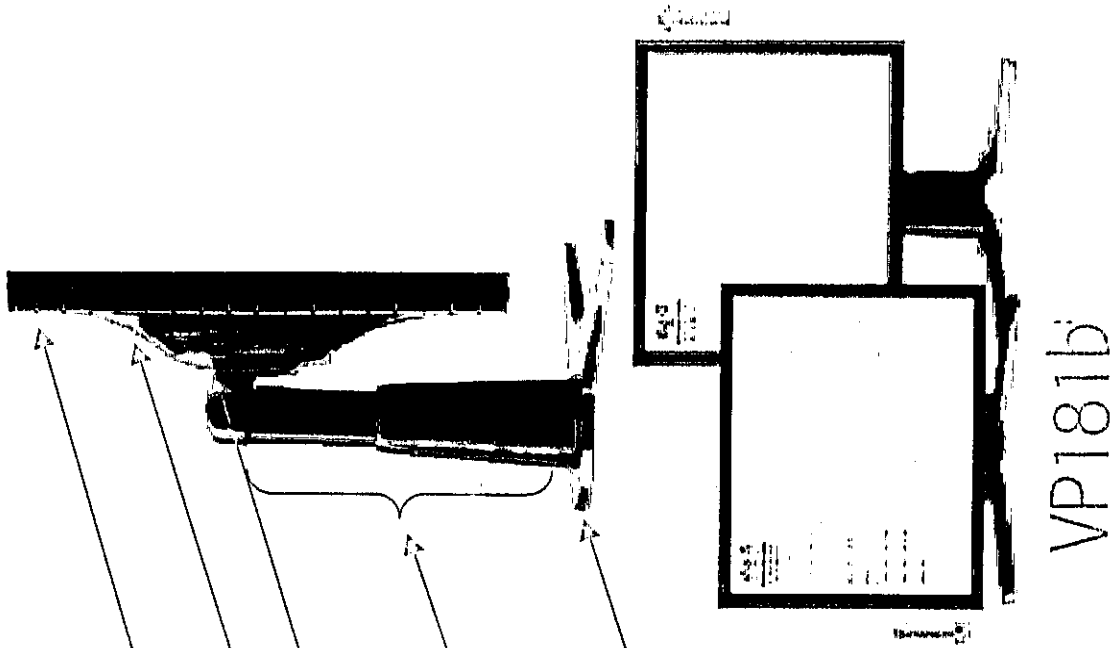
Pivot, height and wall-mount configurations
VESA® wall-mount interface and detachable base for ergonomic flexibility with pivot, height, tilt and swivel adjustments.

5. A portable information device, as recited in claim 1, in which said support structure and said flat panel display assembly is adapted for portrait to landscape position adjustments.



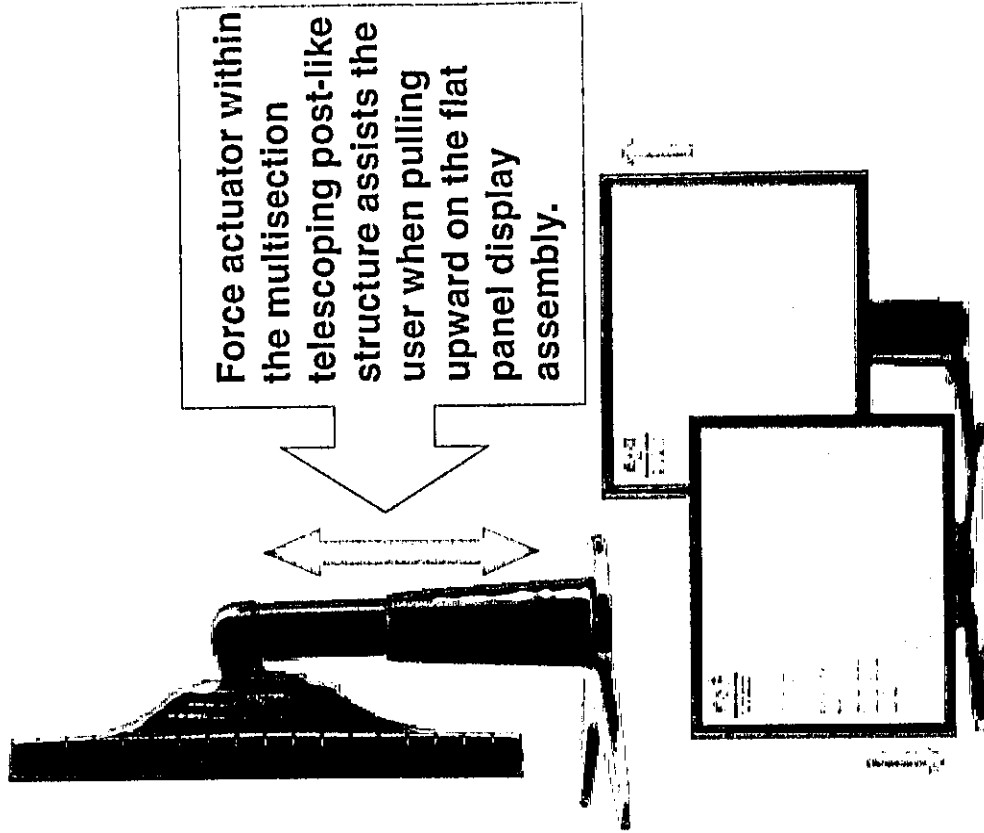
Ditzik US Patent 6,064,373 - ViewSonic

1. A portable display monitor wherein a user has the option to rest the monitor on a roughly horizontal surface of a desk or table, so that its screen is viewable by one or more users, the display monitor comprising:
 - a. a flat panel display assembly defining a display screen and associated display electronics;
 - b. a control electronics means electrically interfaced to said flat panel display electronics;
 - c. a support hinge means directly connected to said flat panel display assembly;
 - d. a multi-section telescoping post-like structure attached to said support hinge means, such that said flat panel display assembly can be pushed down and pulled up by the user, for elevation position adjustments; and
 - e. a base unit adapted to resting onto horizontal surfaces, wherein the base unit is connected to the bottom portion of said multi-section telescoping post-like structure, wherein the user has the option to rest the base unit supporting elements (a)-(e) onto the roughly horizontal surface or a desk or table.



Ditzik US Patent 6,064,373 - ViewSonic

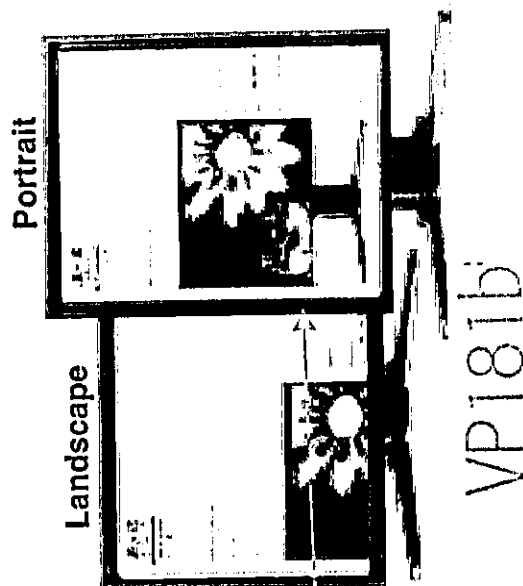
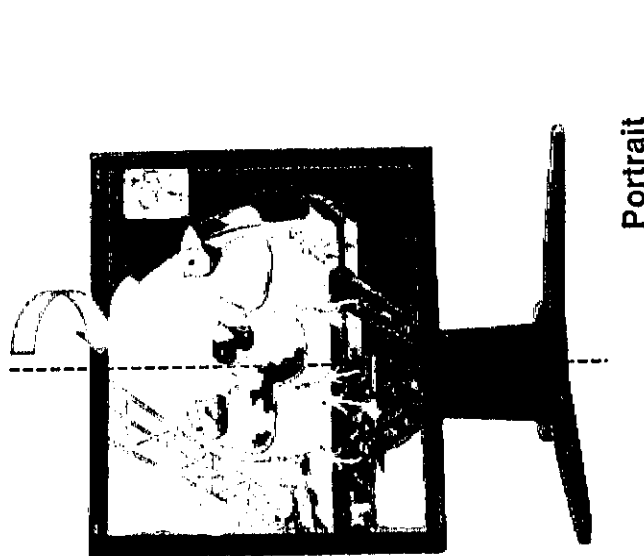
2. A portable display monitor as recited in claim 1, in which said multisection telescoping post-like structure includes a force actuator means applying a vertical upward force along the y-axis, wherein the force of said actuator means approximates the weight of said display panel assembly and said support hinge means, and wherein said actuator means assists the user when pulling upward on said flat panel display assembly.



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Ditzik US Patent 6,064,373 - ViewSonic

4. A portable display monitor as recited in claim 1, in which said support hinge means is adapted to azimuth angle rotation adjustment of said flat panel display assembly, wherein the user has options to adjust the azimuth angle to a desired position by hand.



5. A portable display monitor as recited in claim 1, in which said support hinge means is adapted to roll angle rotation adjustment of said flat panel display assembly, wherein the user has options to adjust the roll angle to a desired position by hand.

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CIVIL COVER SHEET COUNTY IN WHICH THIS ACTION AROSE: OAKLAND

the JS-44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for use of the Clerk of Court for the purpose of initiating the civil docket sheet.

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Bonita, California 91902

DEFENDANTS

Ergotron, Inc., Acer America Corp., ADI Systems, Inc.,
Advant Technology, Amazon.com, Inc., AOC Technologies, Inc.,
BenQ America Corp., Buy.com, Inc., Costco Wholesale Corporation,
Elzo Nanao Technologies, Inc., Envision Peripherals, Inc., et al.

(Addresses Attached)

County of Residence of First Listed

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE LAND INVOLVED

(C) Attorney's (Firm Name, Address, and Telephone Number)

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Attorneys (If Known)

MAGISTRATE JUDGE MORGAN

11. BASIS OF JURISDICTION (Place an "X" in One Box Only)

- ☐ 1 U.S. Government Plaintiff
☒ 3 Federal Question (U.S. Government Not a Party)
☐ 2 U.S. Government Defendant
☐ 4 Diversity (Indicate Citizenship of Parties in Item 11)

III. CITIZENSHIP OF PRINCIPAL PARTIES (Place an "X" in One Box for Plaintiff and One Box for Defendant)

- Citizen of This State ☐ PLA ☐ DEF
Incorporated or Principal Place of Business in This State ☐ PLA ☐ DEF
Citizen of Another ☐ 2 ☐ 2 Incorporated and Principal of Business in Another State ☐ 5 ☐ 5
Citizen or Subject of a Foreign Country ☐ 3 ☐ 3 Foreign Nation ☐ 6 ☐ 6

IV. NATURE OF SUIT (Place an "X" in One Box Only)

CONTRACT	TORTS	FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
<input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Miller Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment and Enforcement of Judgment <input type="checkbox"/> 151 Medicare Act <input type="checkbox"/> 152 Recovery of Defaulted Student Loans (Excl. Veterans) <input type="checkbox"/> 153 Recovery of Overpayment of Veteran's Benefits <input type="checkbox"/> 160 Stockholders' Suits <input type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability	PERSONAL INJURY <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault Libel And Slander <input type="checkbox"/> 330 Federal Employers' Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Marine Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury PERSONAL INJURY <input type="checkbox"/> 362 Personal Injury-Med. Malpractice <input type="checkbox"/> 365 Personal Injury-Product Liability <input type="checkbox"/> 368 Asbestos Personal Injury Product Liability PERSONAL PROPERTY <input type="checkbox"/> 370 Other Fraud <input type="checkbox"/> 371 Truth in Lending <input type="checkbox"/> 380 Other Personal Property Damage <input type="checkbox"/> 385 Property Damage Product Liability	<input type="checkbox"/> 610 Agriculture <input type="checkbox"/> 620 Other Food & Drug <input type="checkbox"/> 625 Drug Related Seizure of Property 21: 881 <input type="checkbox"/> 630 Liquor Laws <input type="checkbox"/> 640 R.R. & Truck <input type="checkbox"/> 650 Airline Regs. <input type="checkbox"/> 660 Occupational Safety/Health <input type="checkbox"/> 690 Other	<input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157 PROPERTY RIGHTS <input type="checkbox"/> 820 Copyrights <input checked="" type="checkbox"/> 830 Patent <input type="checkbox"/> 840 Trademark SOCIAL SECURITY <input type="checkbox"/> 861 HIA (1395f) <input type="checkbox"/> 862 Black Lung (923) <input type="checkbox"/> 863 DIWC/DIWW (405(g)) <input type="checkbox"/> 864 SSID Title XVI <input type="checkbox"/> 865 RSI (405(g))	<input type="checkbox"/> 400 State Reapportionment <input type="checkbox"/> 410 Antitrust <input type="checkbox"/> 430 Banks and Banking <input type="checkbox"/> 450 Commerce/ICC <input type="checkbox"/> 460 Deportation <input type="checkbox"/> 470 Racketeer Influenced & Corrupt Organizations <input type="checkbox"/> 810 Selective Service <input type="checkbox"/> 850 Securities/Commodities/Exchange <input type="checkbox"/> 875 Customer Challenge 12 USC 3410 <input type="checkbox"/> 891 Agricultural Acts <input type="checkbox"/> 892 Economic Stabilization Act <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 894 Energy Allocation Act <input type="checkbox"/> 895 Freedom of Information Act <input type="checkbox"/> 900 Appeal of Fee Determination Under Equal Access to Justice <input type="checkbox"/> 950 Constitutionality of State Statutes <input type="checkbox"/> 890 Other Statutory Actions
REAL PROPERTY <input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	CIVIL RIGHTS <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 444 Welfare <input type="checkbox"/> 440 Other Civil Rights	PRISONER PETITIONS <input type="checkbox"/> 510 Motions to Vacate Sentence <input type="checkbox"/> Habeas Corpus: <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition	<input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Mgmt. Relations <input type="checkbox"/> 730 Labor/Mgmt. Reporting & Disclosure Act <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 790 Other Labor Litigation <input type="checkbox"/> 791 Empl. Ret. Inc. Security Act	FEDERAL TAX SUITS <input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS-Third Party 26 USC 7609

V. ORIGIN

(PLACE AN "X" IN ONE BOX ONLY)

- ☒ 1 Original Proceeding
☐ 2 Removed from State Court
☐ 3 Remanded from Appellate Court
☐ 4 Reinstated or Reopened
☐ 5 Transferred from another district (specify)
☐ 6 Multi district Litigation
☐ 7 Appeal to District Judge from Magistrate

VI. CAUSE OF ACTION

(Cite the U.S. Civil Statute under which you are filing and write brief statement of cause. Do not cite jurisdictional statutes unless diversity.)

Patent Infringement, 35 U.S.C. § 271

POSSIBLE

VII. REQUESTED IN COMPLAINT:

☐ CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23

CHECK YES only if demanded in complaint:

JURY DEMAND: ☒ Yes ☐ No

VIII. RELATED CASE(S) INSTRUCTIONS: IF ANY

JUDGE Gerald Rosen

DOCKET NUMBER

03-74043

DATE

SIGNATURE OF ATTORNEY OF RECORD

September 19, 2005

Marc Lorelli

RICHARD DITZIK d/b/a NetAirus Systems

v.

ERGOTRON, INC., ET AL.

Acer America Corp. 2641 Orchard Parkway San Jose, California 95134	Envision Peripherals, Inc. 47490 Seabridge Drive Fremont, California 94538	Microtek Lab, Inc. 16941 Keegan Avenue Carson, California 90746
ADi Systems, Inc. 2501 Park Boulevard, Suite 205 Palo Alto, California 94306-1925	Ergotron, Inc. 1181 Trapp Road St. Paul, Minnesota 55121	Newegg Computers, Inc. 132 South 6 th Avenue La Puente, California 91746
Advueu Technology 1001 Lawson Street City Of Industry, California 91748	Gateway, Inc. 7565 Irvine Center Drive Irvine, California 92618	Phillips Consumer Electronics 64 Perimeter Center, E. Atlanta, Georgia 31416
Amazon.com, Inc. 1200 12 th Avenue, S., Suite 1200 Seattle, Washington 98144-2734	Hewlett-Packard Company 3000 Hanover Street Palo Alto, California 94304	Princeton Digital (USA) Corp. 3300 Irvine Avenue, Suite 120 Newport Beach, California 92660-3115
AOC Technologies, Inc. 4900 Hopyard Road, #100, Pleasanton, California 94588	Hyundai Imagequest America 3101 N. First Street San Jose, California 95134	Scanport, Inc. 938 Radecki Court City Of Industry, California 91748
BenQ America Corp. 53 Discovery Irvine, California 92618	Iiyama North America Inc. 1560 Brookhollow Drive, Suite 208 Santa Ana, California 92705	Septre Corporation 14141 Covello 7-C Van Nuys, California 91405
Buy.com, Inc. 85 Enterprise, Suite 100 Aliso Viejo, California 92656-2627	LaCie USA 22985 NW Evergreen Parkway Hillsboro, Oregon 97124	Sharp Electronics Corporation Sharp Plaza Mahwah, New Jersey 07430
Costco Wholesale Corporation 999 Lake Drive, Suite 200 Issaquah, Washington 98027-5367	Lenovo Group Ltd. One Manhattanville Road Purchase, New York 10577	Sony Corporation of America 550 Madison Avenue New York, New York 10022
Eizo Nanao Technologies, Inc. 5710 Warland Drive Cypress, California 90630	LG Electronics USA, Inc. 1000 Sylvan Avenue Englewood Cliffs, New Jersey 07632	Tiger Direct, Inc. 7795 W. Flagler Street, Suite 35 Miami Florida 33144-2367